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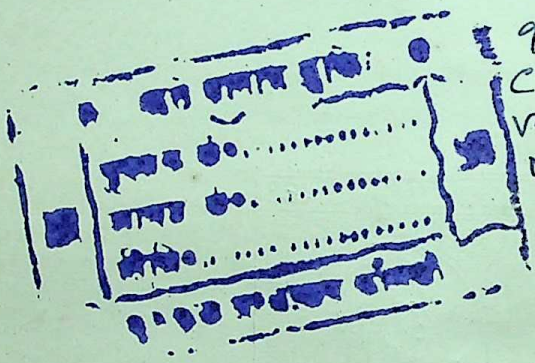

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Some Textual Notes on Asvaghosha's "Buddhacharita."

By C. W. GURNER, I.C.S.

The text of Asvaghosha's "Buddhacharita," published by Cowell in 1893, has not received the attention in India which the importance of the work merits. There are several reasons for this. To begin with, this Kavya does not form part of the traditional stock of Sanscrit learning in India; and there may even be a sub-conscious feeling that its study would detract from the unique position of Kalidas, who owes a certain amount to it. Cowell's text, again, is based on two copies of an archetype believed to be still in existence in Nepal; and it is unsatisfactory to be tinkering with a text derived in this way. At the best it is a poor substitute for getting at the original, while sooner or later someone will do so, and emendations hazarded meanwhile will have to face the test. Finally there are extant translations of the work both in Chinese and in Tibetan, of which the former only has been rendered into English. A complete equipment for criticism of the Sanscrit text would include therefore some knowledge of these two collateral authorities, and the few Oriental scholars who are well versed in all three languages have more important tasks than the correction of this out-of-the-way text.

Beal's translation from the Chinese version does at times offer quite definite suggestions, or rather confirmation of fairly obvious corrections which might have occurred without reference to this source. It is to be remembered, however, that the text which the Chinese translator had before him may by

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no means always have been correct when it differed from ours Nor does the translation make any claim to be a work of exact Sanscrit scholarship. Even if one allows for considerable differences in his text the Chinese translator must often be paraphrasing, and is sometimes plainly shirking difficulties. Moreover, he is obviously not attracted by the long passages describing feminine charms, which in some ways interest the Sanscrit reader most, because they contain the closest contacts with the poetry of Kalidas. I must not digress further in the way of estimating the value of the Chinese translation as a textual aid, and proceed to the following notes, which are based on a study of the Sanscrit text, with occasional help from Beal's translation of the Chinese version.

It should be added that in some cases the correction is so obvious that one is tempted to suspect a misprint in Cowell's edition. It is generally clear however, either from his introduction or from his translation in Vol. XLIX of *The Sacred Books of the East* that he had definitely adopted the reading printed.

Textual Notes.

III. 42. शक्रोऽपि येनैष कृतो ऽस्वतंत्रः

śakro'pi yenaisa kṛto'svatantrah

The sense required for शक्रो śakro and taken by Cowell is "strong." The charioteer is pointing out the diseased man (एष eṣa). But can शक्रः śakrah have meant anything else in Asvaghosha's time than "Indra" who is *not* subject to disease, nor indicated by एष eṣa ? I would read शक्तो śakto.

V. 61. विवृतास्यपुटा विवृद्धगात्रा

vivṛtāsyapuṭā vivṛddhagātrā

Of the women in their ugliness asleep. Can विवृद्धगात्रा vivṛddhagātrā "with fully developed limbs" (Cowell) stand ? The meaning is doubtful, and the sense given rather pointless. I suggest विवृत्तगात्रा vivṛttagātrā of the legs apart as they lie asleep. C.P. प्रकाशगूह्या prakāśagūhyā at the end of the line, and विवृत्तनेत्रा vivṛttanētrā—XIII. 30.

VI. 9. जनीभवति भूयिष्ठं स्वजनोऽपि विपर्यये

janībhavati bhūyiṣṭam svajano'pi viparyaye

Sic C.P. But P. has जनीभविति janībhaviti. Cowell suggests जन्यो भवति janyo bhavati "a common man" or takes जनीभवति jani bhavati as "a quaint expression for परगणो भवति paragaṇo bhavati." It would be altogether too quaint, and still far from the sense required, which is given exactly by the correction of one letter only, viz.: जड़ीभवति jaḍībhavati "Even kindred (or one's partisan) becomes cold in misfortune."

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VII. 12. यस्मादिमं धर्मविधिं न जाने
तस्माद्भवानर्हति भाषितं मे यो निश्चयो यं प्रति वः प्रवृत्तः
yasmādimam dharmavidhim na jane
tasmād bhavān arhati bhāṣitum me yō niśchayō yam
prati vah pravṛttah

C. adds in margin युष्मान् प्रति yusmān prati. Cowell translates "Would you kindly explain what resolve possesses each one of you." But can such a sense really be obtained? I do not think that anything can be done with यं प्रति वः yam prati vah. I would read यो निश्चयाय प्रति वः प्रवृत्तः yō niśchayāya prati vah pravṛttah. The object of भाषितुम् bhāṣitum is इमं धर्मविधिम् imam dharmavidhim carried on from the protasis, and यो yō relates to मे mē "Since I do not know the procedure of this religion therefore tell it to me who have come to you for certainty."

VIII. 37. विनाकृतास्तेन सहैव रोधनैर्भृशं रुदन्तीव विमानपंक्तयः
vinakrtāstena sahaiva rōdhanairbhṛśam
rudantvīa vimānapanktayah

Of the palace when Siddhartha has left. I defy anyone to translate सहैव रोधनैः sahaiva rōdhanaih.

Certainly not Cowell's "separated with him from all who could restrain them." Read सहावरोधनैर्भृशं sahāvarodhanairbhṛśam "The palace weeps together with the women" about whom we have actually been hearing in the preceding verse.

X. 18. चलस्य तस्योपरि शृंगभूतं
chalasya tasyōpari śṛingabhūtam

The simple change of चलस्य chalasya to शैलस्य śailasya must, I think, be right. It seems equally forced to take चलस्य chalasya as the equivalent of आचलस्य āchalasya (mountain) or to suppose the meaning to be that Siddhartha's impassivity makes the mountain seem to move (Cowell).

XI. 47. यदा च जित्वापि महीं समग्रां वासाय दृष्टं पुरमेकमेव
yadā cha jitvāpi mahīm samagrām vāsāya
dṛṣtam puramekameva

दृष्टं dṛṣtam, if it stands, must be taken in the sense of "looked favourably on," "chosen for." But can this be paralleled and is the construction of दृश् dṛś with the dative grammatically possible? I would read जुष्टं juṣtam which fits in exactly and gives the required contrast to the preceding जित्वा jitvā.

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XI. 73. नृपोऽपि च प्रापुरिमं गिरिं व्रजन्
nṛpō'pi cha prapurimaṁ giriṁ vrajan

Here the Chinese version does help. "He returned once more to Rajagriha." C.P. X. 1: श्रीमद्गृहं राजगृहं जगाम śrīmad-gṛhaṁ rājagṛhaṁ jagāma. It is probable that गृहं gṛhaṁ has been corrupted to गिरिम् girim but many corrections are possible. I suggest नृपोऽपि च राजगृहं पुरं व्रजन् nṛpō'pi cha rājagṛhaṁ puraṁ brajan, the sense of ययौ yayau being carried on from the preceding line by च cha which cannot possibly be taken as "with his courtiers" with ellipsis of substantive (Cowell). But I still suspect व्रजन् vrajan.

XII. 90. तद्वंशस्थायिभिः शिष्यैः
tadvaṁsasthāyibhih śiṣyaih

For वंश vaṁsa which is distinctly forced in the sense of "school" read वश vaśa.

This is confirmed by the simile of the relation of the sense to the mind which follows immediately.

XII. 104. आहारमूलोऽयं उपायः... । असुरीकरणे धीरः
āhāramūlō'yam upāyah... asurīkaraṇē dhīrah

Cowell's conjecture from आसूरकरणे (आशू P.) āsūrakaraṇē (āśu P.). But I do not see that it will stand interpretation. The clue again lies in Chinese "Excellent law results from the life restored." I suggest असूपकरणो asūpakaraṇo "The way that is rooted in meals and has life as an instrument."

XIII. 12. पृष्टः स चानेन (शरेण)
pṛṣṭah sa chānena (śareṇa)

Cowell definitely retains श्रृष्टः pṛṣṭah "somewhat probed by." But surely it must be स्पृष्टः spṛṣṭah.

XIII. 22. व्याडोत्तरासंग भुजाः
vyāḍottarāsangabhujāh

"With arms reaching out longer than a serpent" (Cowell). Perhaps just possible; but a difficult meaning to get out of each word involved. The Chinese version, which at this passage is following our text closely, had here a reference to snakes and tigers. I suggest that व्याड—vyāḍ—or व्याघ्रोरगासंग भूजाः vyāghroragāsaṅgabhujāh goes in the right direction. आसंग āsanga might be taken as "attached to" but I suspect that it conceals some substantive standing in the same relation to व्याघ्र vyāghra as भुजाः bhujāh to उरग uraga.

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"With snakes for arms and tigers for..."
A characteristic device of Aśvaghosha's.

XIII. 50. तत्रैव नासीत्तमृषिं ददर्श्व कामात्मकः श्रेय इवोपदिष्टं॥
tatraiva nāsittam ṛṣim dadarsa kāmatmakah
srēya ivōpidiṣṭam

Of Mara's demon threatening Siddhartha with fiery eyes. "He saw the sage, and lo he was not there" (Cowell) which is the kind of sense required, but impossibly rough construction. All comes right if we read तत्रैव नासीनमृषिं tatraiva nāsinam ṛṣim. There was S. sitting in front of him and he could not see him, just as illustrated by the simile. The irregular participle may have puzzled the scribe.

XIII. 52. द्यौः फलतीति मत्वा dyauḥ phalatīti matvā

Of a loud sound. "Thinking that the Heavens were bursting" Cowell. But फल phal does not connote a sudden explosion, but slow steady growth; and can hardly be used of a noise like thunder. I feel pretty sure that it should be स्तनतीति stanatīti. C.P. XII. 114: निष्टनतीव मेदिनी niṣtanatīva mēdinī.

The following minor corrections I would take this opportunity of placing on record without going into the reasons for each, which will be obvious from the text:—

V. 62. For रुग्ण rugṇa read भुग्न bhugna.

V. 74. For प्रवेष्टुकामः praveṣṭukāmah read प्रवेष्टुकामं praveṣṭukāmaṁ.

VI. 13. For मुकुटोद्दीप्त mukuṭoddīpta read मुकुटोद्दीप्ति mukuṭoddīpti.

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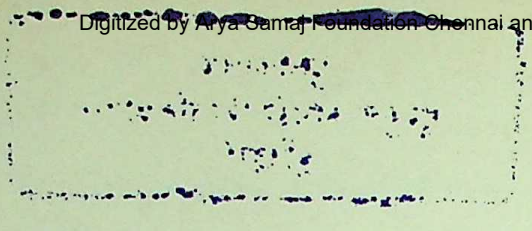

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पुस्तकालय
गुरुकुल कांगड़ी विश्वविद्यालय
हरिद्वार

Brahmanism in Bengal.

By M. M. CHATTERJI.

By Brahmanism is to be understood the body of religious doctrines of faith and conduct, contained in the scriptures, traditionally called, the "three-fold path" (*prasthāna trayam*). These scriptures are (1) the ten great or *mahā* Upanishats namely: Isa, Kena, Katha, Prasna, Mundak, Mundukya, Aitareya, Taittiriya, Chhāndogya and Brihad Āranyaka, (2) the Brahma Sutras, and (3) the Bhagavad Gita. The acceptance and expression of these doctrines in Gauda or Bengal, in the limited sense of ancient usage, form the subject of present consideration.

Gauda, Gour or ancient Bengal has a special position in the Brahmanic religion. Among comparatively modern teachers Sankara, born in a Malabar village, has the most extensive influence in the Brahmandom of the present day. Ignoring others, Sankara's system of exposition is accepted as synonymous with the Vedanta, considered as the orthodox philosophical representation of the teachings of the "three-fold path." Sankara established four centres (Mathas) for the radiation of his teachings all over the land by the agency of the ten ascetic orders, founded by him. Before his time there were wandering friars, but no monastic orders were known to Brahmanism; monasticism founded by Buddha, being confined to his followers. The northernmost centre, called the Joshi Math, has ceased to exist, the other three are still in existence, in varying degrees of prosperity. The one in Mysore, known as the Sringeri Math, is the richest and most influential. It is noteworthy that the first abbot or Mohunt of this Math was a northern man, Suresvara. Vedic reaction, against Buddhism, in point of fact, originated in Northern India by the labours of Kumarila Bhatta, whose sister was, according to tradition, married to Mandan Misra, the first disciple of Sankara. Under the name of Suresvara he is the author of the well-known Vedantic work entitled "Naiskarmasiddhih," besides many *vārtikas* or synopses of scriptures. In passing, attention may be drawn to the unity of Brahmanism from the places of birth of Sankara and his first disciple. Kumarila was a revivalist of Vedic rituals and not of Vedic teachings concerning God and His relation to the individual soul and the universe. This was left for Sankara to accomplish on a large scale and permanently, but the spiritual stream which poured out so abundantly through him had its origin from a Gaudiya or ancient Bengali source as will presently be seen.

Kumarila's labours bore the richest harvest in Kanyakubja

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the home of Mandan Misra and a powerful centre of religious activity. Summing up the evidence of Chinese pilgrims Mr. Vincent Smith says: "the Buddhist monasteries, of which only two had existed in the fifth century, numbered more than a hundred in Harsha's time (i.e. in the seventh century) when Brahmanical temples existed in even larger number." (*Oxford History of India*, p. 167.)

The position of Brahmanism in Kanyakubja explains the importation from it into Bengal of five Brahmans by the revivalist zeal of Ādisura, the non-Bengali King of Bengal. This event can confidently be placed in the eighth century as about sixteen generations intervened between the first immigrants and the establishment of Kulinism by Ballal Sen in the 12th century. Mr. Vincent Smith is of the same opinion by placing Ādisura's reign in the 8th century A.D. (*op. cit.*).

The subsequent religious history of Bengal for several centuries does not directly bear upon the influence of Gauda on general Brahmanism of India. The seven hundred families of nominal Brahmans whom the Kanyakubja immigrants found scattered over Bengal, need not be considered in the present connection. What is noteworthy is the complete absence from Gauda of Gaudiya Sarasvat Brahmans, generally called, for pre-eminence, Gaudiya without qualification.

Owing, obviously, to Buddhistic dominance the Gaudiya Brahmans appear to have emigrated in two principal streams and settled in the only rice-producing tracts in Western India namely, Kashmir in the north and Konkan in the south. Change of place did not produce change in food. They have continued, like Bengali Brahmans, to be rice-eaters to whom animal food is without any religious ban. The daily diet of Gaudiya Brahmans is apparently distinctive of their original home. According to the tradition prevalent among his monastic followers and cited by Yajneswar Bhatta in "Aryavidyā Sudhambudhi" Sankara was born in the Sambat year 689 (=632 A.D.) in the month of Baisakh on the third day of the waxing moon.

निधि नागे भवन्त्यब्दे विभवे मासि माधवे।

शुक्लपक्षे तृतीयांस्तु शङ्करार्य्योदयः स्मृतः॥

This apart, Sankara is generally placed in the seventh century A.D. Govinda, in extreme old age is said to have initiated Sankara. Gaudāchārya, Govinda's guru, may therefore be safely placed in the 6th century. Two of his writings are extant. His Kārikā or metrical exposition of the teachings of the Māndukya Upaniṣad and his commentaries on the Sānkhya Kārikā of Isvar Krishna are well known. A couple of verses, besides, attributed to his authorship are handed down by tradition. These afford ample evidence of Brahmanism as accepted

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and taught by him. The verses referred to may be translated as follows :—

The Supreme Brahma, indicated by the words "What that" and accepted by the Vedic texts, "Yato va," etc., and "Jato vachah," etc., and others is to be worshipped. The worshippers of what are made different by ascription of different names, forms and so forth are in conflict with one another (but) with them this does not conflict.[1]

These Vedic texts from the Taittiriya Upanishat are given at foot.[2]

To the same effect is the verse[3] from Gaudāchārya's Mān dukya Kārikā, translated below :—

"Dualists, steadfast in accepting the tenets of their respective doctrines, oppose one another. To them this (teaching) is not opposed."

Misconception may naturally be apprehended from the reference to Dualism in the last citation. To some minds it may be suggestive of an asserted superiority of Adualism (Adwaitavāda) over Dualism, as systems of philosophy, embodying intellectual interpretations of existence. Such a conclusion would imply opposition, resulting in the establishment of the superiority of one system and the inferiority of the other, whereas the clear intention of Gaudāchārya is to remove the apparent discord of religious doctrines and establish their real unity

Kullūka Bhatta, the well-known commentator on Manusanhita, was a Bengali Brahman of the Vārendra subdivision. Kinship with him is claimed by a well-known aristocratic family of the Rajshahi District. Unlike many other commentators he accepts the teachings of this sacred law as appearing in the substantially accurate English translation given below :—

"Other Brahmans, seeing with the eye of knowledge that

---

1 उपास्यं परमं ब्रह्म यत् तत् शब्दोपलक्षितं ।
यतो वेति यतो वाच इत्यादि श्रुतिसम्मतं ॥
नाम-रूपादिनिर्देशै-र्विभिन्नानामुपासकाः ।
परस्परं विरुध्यन्ते न तैरेतद्विरुध्यते ॥

2 यतो वा इमानि भूतानि जायन्ते येन जातानि
जीवन्ति यत् प्रयन्ति अभिसंविशन्ति
तद्विजिज्ञासस्व तद्ब्रह्म ॥.....
यतो वाचो निवर्त्तन्ते अप्राप्य मनसा सह ।

The easy access to published translation makes its insertion here wholly unnecessary.

3 स्वसिद्धान्तव्यवस्थासु द्वैतिनो निश्चिता दृढाः ।
परस्परं विरुध्यन्ते तैरयं न विरुध्यते ।

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the performance of those (i.e. Vedic) rites has knowledge for its root always perform them with the knowledge alone." (*S.B.E.*, Vol. XXV, p. 132.)

"After giving up even the above-mentioned sacrificial rites, Brahman should exert himself in (acquiring) the knowledge of the Soul, in extinguishing his passions and in studying the Veda. For that secures the attainment of the object of existence, especially in the case of a Brahman because by attaining that not otherwise a twice-born man has gained all his ends." (*Op. cit.*, p. 504.)

It is to be noted that Kullūka interprets, or at any rate accepts, an interpretation of Manu which throws into relief the universal aspect of Brahmanism as opposed to sectarian particularisms of religion. Kullūka adds, "This is the injunction on Brahman renouncers of Vedic ritual."

Madhusūdan Saraswati was a sannyasi, who lived in the reign of the Emperor Akbar. His secular name is unknown, but his collateral descendants can be traced among the Vaidik Brahmans, now living in the Districts of Faridpur and Rangpur. According to tradition he received non-Brahmans as sannyasis and gave them military training. His commentary on the "Bhagavad Gita" is well known and he is also the author of a philosophical treatise called "Prasthāna Vedah" or "Difference of Paths." Its conclusion, in translation, is as follows:—

"The true intention of all path-maker sages (i.e. spiritual preceptors) is the acceptance of the secondless Supreme Lord (by their respective paths), finding end and completion in the doctrine of illusion or contingent reality (which teaches the contingent character of all beings in relation to the Being *per se*). These sages could not be in error owing to their all-wise mental disposition. For the benefit of those who are unable at once to enter the path, leading to the attainment of the supreme end of existence, by reason of attachment to external objects of enjoyment the sages have shown different methods to prevent complete Godlessness on their parts. Those, who, misunderstanding their true purpose, accept opposition to the Veda as that purpose, become lovers of diverse paths. Thus all are blameless."[1]

In the Saka year 1751 corresponding with 1829 A.D. Ram Mohan Roy published (*inter alia*) in English a short catechism of Universal Brahmanism, supported by citations from

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[1] "सर्व्वेषां प्रस्थानकर्त्तृणां मुनीनां विवर्त्तवाद पर्य्यवसानेन अद्वितीय परमेश्वर प्रतिपाद्य तात्पर्य्यं। नहि मुनयः भ्रान्ताः सर्व्वज्ञत्वात् तेषां। वहिर्विषयप्रवणानाम् आपातः पुरुषार्थप्रवेशो न सम्भवतीति-नास्तिक्यवारणाय ते प्रकारभेदा प्रदर्शिताः। यत्र तेषां तात्पर्य्यं अबुद्धा वेद्विरुद्धे अर्थे तात्पर्य्यं उत्प्रेक्षमाणा तन्मतमेव उपादेयत्वेन गृह्णन्तो जनाः नानापथ-जुषः भवन्त इति सर्व्वमनवद्यं!"

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scriptures of supreme authority in Brahmandom. The English version is entitled "The Universal Religion" with the subtitle "Religious Instructions Founded on Sacred Authorities." Apposite citations from this treatise are subjoined :—

"*5th Q.*—Is any one, on sufficient grounds, opposed to this worship ?

A.—To this worship no one can be opposed on sufficient grounds for, as we all worship the Supreme Being, adoring him as the Author and Governor of the universe, it is impossible for any one to object to such worship; because each person considers the object whom he worships as the Author and Governor of the universe; therefore, in accordance with his own faith, he must acknowledge that this worship is his own. In the same manner, they, who consider Time or Nature, or any other Object, as the Governor of the universe, even they cannot be opposed to this worship, as bearing in mind the Author and Governor of the universe. And in China, in Tartary, in Europe, and in all other countries, where so many sects exist, all believe the object whom they adore to be the Author and Governor of the universe; consequently they also must acknowledge, according to their own faith, that this our worship is their own.

8th Q.—If you worship the Supreme Being, and other persons offer their adoration to the same Divine Being, but in a different form; what then is the difference between them and you ?

A.—We differ in two ways; first, they worship under various forms and in particular places, believing the object of their worship to be the Supreme Being; but we declare that he, who is the Author of the universe, is to be worshipped; besides this, we can determine no particular form or place. Secondly, we see that they who worship under any one particular form, are opposed to those who worship under another; but it is impossible for worshippers of any denomination to be opposed to us; as we have shown in the answer to the 5th question."

Applying Brahmanical sacred teachings to Islam, Ram Mohan Roy in referring to the founder of that faith adds, "may divine benediction rest on him and his followers,"[1] and in regard to the Christian religion he published "The Precepts of Jesus: the Guide to Peace and Happiness."

Image-worshipping Bengali Brahmans have not failed to exhibit the unity of that form of worship by putting forward Harihar, Kali Krishna and Hara Gauri. The last-named is known outside of Bengal as Ardhanarisvara, while the other two are scarcely known outside of Bengal. The currency of this thought in Bengal is attested by the extensive use of the former two as names of individuals.

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1 English translation of Tuhfatul Muwahhiddin.

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The conclusion naturally arises that for many centuries Gauda or Bengal has, with fervid faith and unshaken loyalty to Brahmanism, maintained the flow of religious amity and concord.

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ARTICLE No. 3.

The Upaniṣad-texts and their position in Śruti-literature.

By UMESH CHANDRA BHATTACHARJEE.

We have had quite a plentiful literature on the philosophy of the Upaniṣads; but it is a very curious fact that no real attempt has been made to critically establish the texts of these famous books and to determine their exact place in the extensive mass of Śruti literature as a whole.

There were no doubt some good reasons for it. When Dārā Shūkoh first translated the Upaniṣads into a foreign tongue, he found these books as already bearing a definite form. They had already been carved out of the original books of which they perhaps formed parts and already the extent and limit of their texts were more or less firmly fixed. They were already existing as more or less well-defined books, having an independent life of their own. And Dārā Shukoh translated them as he found them. Through Dārā, they found their way to Europe.

When the study of the Upaniṣads was revived in Europe with greater vigour and zeal in the second half of the last century, the texts of the Upaniṣads were found to have suffered little variation. The philosophies of the Upaniṣads were and are still being constructed on these texts which have been accepted without demur. Editions have appeared in Europe and in India—without any textual criticism worth mentioning.

By textual criticism here, we do not mean simply an attempt to finally establish the readings of passages after a collation of different manuscripts; nor do we suggest an edition of the books in which different readings of passages are inserted. We mean something much more important than this.

It is a well-known fact that some at any rate of the earlier Upaniṣads, e.g., the Bṛhad., the Ait., etc., are parts of larger books from which they have been separated. These larger wholes are also extant. And with regard to the other earlier Upaniṣads also, it may be presumed that they too were parts of larger wholes, although unfortunately, in their case, the wholes have sometimes disappeared, leaving only the parts behind.

Now, the question is: In giving the name Upaniṣad to certain chapters of a larger book, are we quite sure that we are not including some wrong and leaving out some right chapters?

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We no doubt have inherited these '*Selections*,' if one might call them so, and we are using them just as we have found them. But have we no right to examine them critically and to see if there has been any corruption of the texts or not? A lot of things has been said about interpolations in the Mahābhārata, specially with reference to the Bhagavadgītā. Are we quite sure that the Upaniṣads have been entirely immune from intermixture with heterogeneous texts?

There is no doubt a very important difference between the Upaniṣads which belong to the *revealed* literature (Śruti) and the Mahābhārata, etc., which are only Smṛti or *unrevealed*. But that is a difference which exists only in the traditional and orthodox view of these matters and is not valid for a modern critic. Of course, once this reverential attitude was developed towards the Upaniṣads, they must have been very carefully preserved from mutilation and accretion. But it is obvious that this attitude towards what have been called the Śrutis, is chronologically much later than the Śrutis themselves; and before this attitude was developed, the Śrutis were not so immune from change as they may have been afterwards.

Besides, quite a large number of scholars have been persistently suggesting that the Upaniṣads owed their origin to the Kṣatriyas and that they were only subsequently incorporated into the traditional scholastic literature of the Brāhmaṇas. If this view is accepted, then, we have all the more reason to scrutinise the texts; and to see that scholastic and ritualistic traditions have not been needlessly intermingled with the teachings of the Upaniṣads; and to trace out, if possible, the texts which still preserve the purely Upaniṣadic teachings intact and to weed out those that are essentially Brāhmaṇical in character.

Deussen (Phil. of the Upaniṣads, *Eng. tr.*, p. 16), vaguely suggests that there were 'older texts' underlying the 'extant texts' of the Upaniṣads. Obviously, he considers these 'older texts' irretrievably lost. But an examination of the existing texts might yet show that the task of recovering these lost texts is not so hopeless as might appear at first sight, provided we correctly estimate the relation between the Brāhmaṇas and the Upaniṣads. As a matter of fact, the texts have not been lost beyond recovery: they only lie buried in the mass of Brāhmaṇical literature. An attempt to recover these 'old texts' of the Upaniṣads is bound to fail, if by them we mean completed books existing 'among the Kṣatriyas and not within Brāhmaṇa circles.' Such books, if they ever existed, have certainly been lost; but one may be permitted to doubt the existence of such books at all.

It appears that we have some grave misconceptions in this connection. The castes in ancient India were not so rigid as now. An interchange of ideas was always possible between

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one caste and another; and that was perhaps the normal order of things. The story of an occasional quarrel between a Brāhmaṇa and a Kṣatriya does not imply anything like an extensive caste-hatred, and it certainly does not prove that the castes were mutually exclusive. On the contrary, the relation between them was so close that it was not possible for any cult or sect to grow among and remain exclusively confined to, one caste only. Much less was it possible for any literature to grow up among the Kṣatriyas and remain confined to them, without any Brāhmaṇical interaction. The very Kṣatriyas who in the Upaniṣads are described as adepts in Ātmavidyā, were also great sacrificers and employed Brāhmaṇas for this purpose (cf. Janaka, Br. Up. iii). The two higher castes perhaps never lived in separate and airtight compartments, as it were; an exchange of ideas between them was free, easy and natural. Their spiritual life was common. Both were subject to the same rules of Varṇa and Āśrama.

It may be fairly presumed that the Upaniṣads embody the speculation to be practised by a man of the higher castes in the third and fourth Āśramas, i.e. as a recluse in the forests. The allegorical interpretations of rituals contained in the Upaniṣads look like substitutes for their actual performance. But this is not necessarily the case, for, even in the Brāhmaṇas, in connection with the directions given for the performance of ceremonies, such allegorical interpretations are found in plenty. Yet, in later times, at any rate, the Upaniṣadic speculation was expected to be practised by the recluse in the forests (cf. Vedānta-Sūtra: iii. 4. 17, *et seq.*; Ch. Up. ii. 23. 1; v. 10. 1; Muṇḍ. Up. i. 2. 11; Br. Up. iv. 4. 22. See also Manu vi. 29).

But just as we in modern times may study and discuss the Yoga practices without ever actually following them in life, though in earlier times only those who cared to follow them, studied them and those who studied them also followed them in practice; so, in ancient times, the Upaniṣadic ideas also were studied and discussed by men still living in the world and were not necessarily confined to recluses in the forests. Thus, in Br. ii. 4, Yājñavalkya gives a discourse on Brahmavidyā to his wife Maitreyī, even before he had actually renounced the world but was only about to do so. Hence also it was that even a royal court was not too profane for such discourses and even women could take part in them. Besides, the life of the recluse was the third stage of life and a preparation for it was necessary. That made it incumbent for a man, even before he had renounced the world, to have a fore-taste of the speculation he was to pursue later.

Thus, so far as Āśrama was concerned, though the actual practice of the speculation appears to have belonged to the later Āśramas, yet it was developed by men still in the earlier

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Āśramas. And so far as Varṇa or caste was concerned, it was, like the Vedas in general, the joint property of the upper classes, specially the first two. The Brahmins, however, had a predominant share in it. The teaching of the subject does not appear to have ever been in hands other than their own, though they were powerfully backed by Kṣatrya princes in this, as in other pursuits and derived immense benefit from their patronage. The theory, therefore, that the Upaniṣadic books were developed by the Kṣatriyas and for a long or short time existed separately and independently of the Brāhmaṇical writings and were only subsequently incorporated into them, appears to be without any strong foundation. We need make, therefore, no search for the lost 'older texts' of Kṣatriya origin.

The development of the Upaniṣads was spread over a fairly long duration of time; and they grew as part of Brāhmaṇical literature and arose out of them. It was only slowly, and presumably much later, that they blossomed into independent existence and were considered separately from their matrix, the Brāhmaṇas. It should be remembered that according to the nomenclature of the Mīmāṇsā School (cf. Mīmāṇsā Śūtra, ii. 1. 32-33), there are only two branches of the Śruti literature, viz., Mantra and Brāhmaṇa; and the Upaniṣads as a part of this Śruti literature are found some in the Mantra portion (e.g the Iśā) and some in the Brāhmaṇa portion (e.g. the Br. Up.). The Mīmāṇsā does not recognise any independent authority of the Upaniṣads as such and would not admit that they were valid as apart from the other portions of the Vedas and even in opposition to them.

It is only in the Vedānta School that the Upaniṣads are considered more or less exclusively from the other portions of the Vedic literature. But even there it is hardly ever openly said that these other portions of the Vedas—the Mantras and the Brāhmaṇas proper—are *less* authoritative than the Upaniṣads, though actually they are perhaps treated as such. On the contrary, Śruti is always thought and spoken of as one organic and consistent whole, though references are chiefly, if not exclusively, made to those parts of it only which have been called Upaniṣads. It is also doubtful if for the author of the Vedānta-Sūtras, the Upaniṣads were *independent* books at all.

Even in the 8th century after Christ, when Śankara commented on the Upaniṣads, these do not appear to have been looked upon as independent books. As Deussen points out, (*op. cit.*, pp. 30-31), Śankara seems 'to have had in his hands no collection of Upaniṣads, since he looks upon the greater number of them as still forming the concluding chapters of their respective Brāhmaṇas, to which therefore he is accustomed to refer at the commencement of the Upaniṣad commen-

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tary.' Deussen, however, is slightly inaccurate here; for, the Īśā Upaniṣad is not referred to any Brāhmaṇa, but is spoken of as a *Mantra*-Upaniṣad. Nevertheless, he correctly estimates the prevailing attitude towards the Upaniṣads: they were not viewed as independent books. They were always affiliated to one or other of the four Vedas and were looked upon as constituent parts either of their Brāhmaṇas or of their Mantras.

It is no doubt true that such an affiliation to a Brāhmaṇa or Mantra text, was not possible in the case of all the Upaniṣads, even those that Śankara commented upon. But this may be explained by the easy hypothesis that the corresponding Brāhmaṇa text has been lost—a not impossible phenomenon in ancient India; or, perhaps, that the Upaniṣad in question belonged to a Śākhā which had no independent Brāhmaṇa of its own.

Śankara commented on the Upaniṣads without at the same time commenting on the Brāhmaṇas of which he regarded them as parts. But this only meant that the part in question here was considered more important than the other parts. Such a phenomenon of selecting a part as against the whole and commenting on it, has been repeated with regard to the Bhagavadgītā and some other books also. A commentator of the Bhagavadgītā never felt called upon to comment upon the whole Mahābhārata, though he would always admit that the Gītā was a part of it. Those, however, who commented on the Mahābhārata, had to comment on the Gītā as well (e.g. Nīlkaṇṭha). The same was the case with the Brāhmaṇas and the Upaniṣads: one who commented upon the Śatapatha Brāhmaṇa or the Aitareya Āraṇyaka, had also to include the corresponding Upaniṣads within the scope of his work. But a separate commentary of Upaniṣads was also possible and has actually been written; that, however, did not imply that they were viewed as independent books.

That the Upaniṣads subsequently, though perhaps somewhat recently, came to be studied as independent books, cannot be denied. But it is extremely doubtful if orthodox India ever viewed them as having any other origin but that of the other Śrutis and as being independent books at all. They were only selections, as it were, from the Śrutis. An interesting parallel to this sort of selection is afforded by the various Gītās. Most of the Gītās are still found embedded in the larger books of the Purāṇas and the Mahābhārata. But they are much oftener read and more widely known than the original books, in many cases, of which they are but a few small chapters. In the same way, the Upaniṣads also attained a name and importance far in excess of the original works of which they were but parts. And hence they attracted more attention than the larger books.

Now, as regards the origin of the Upaniṣads, we have to

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accept either of two hypotheses: (i) We may say with the modern European scholar that they originated with the Kṣatriyas and were only subsequently adopted by the Brāhmaṇas and incorporated into their system of scholastic traditions. (ii) Or, we may accept the more ancient and orthodox view that the Upaniṣads had the same origin as the other branches of Śruti literature; and that, like precious metals extracted from their mines, they also were excerpted from the huge mass of original Śrutis. In any case, the problem of the true form of the Upaniṣadic texts cannot be avoided. If the Upaniṣads, having their origin elsewhere, were then brāhmaṇised and mixed up with the ritualistic literature of the Brāhmaṇas, we may well ask: how much of the original form has been preserved and how much lost in this transition? If, on the other hand, the Upaniṣads were only excerpts from the mass of Śruti literature,—if it was intended to present in them only the more precious things in that literature,—then also, we may ask: how much of the original dross still clings to them and how far has the ore been really purified?

We here shall proceed on the second hypothesis and attempt to answer the second question. In other words, we shall attempt to see how far the Upaniṣads are free from Brāhmaṇical passages and whether Upaniṣadic passages are not still lying buried in the mine of Brāhmaṇical writings.

But it must be pointed out here that our enquiry is confined to the earlier Upaniṣads and has special reference to the prose ones. In the first place, we limit our enquiry to the earlier Upaniṣads, because a good many of the later Upaniṣads are too palpably sectarian (e.g., the Kṛṣṇa-Upaniṣad, the Devī-Upaniṣad, etc.), or, are too palpably ritualistic (e.g., the Rudrākṣa-Jābāla Upaniṣad, etc.), to deserve any consideration here. Besides, quite a number of them are spurious, e.g., the Allā-Upaniṣad, and many are again mere imitations with indifferent success, e.g., the Avyakta-Upaniṣad. While some are not Upaniṣads at all except in name, e.g., the Bhikṣuka Upaniṣad. Such books could have little real connection with the Mantra- and Brāhmaṇa-literature, except that perhaps they inherited many ideas from that literature. But they must have borrowed more ideas from elsewhere. To ascertain the extent of their indebtedness to Vedic literature is also an interesting problem, but it cannot be attempted here; and these books we must pass over now.

In the second place, we limit our enquiry to the prose Upaniṣads, because the Brāhmaṇas were written in prose; and the intermixture with foreign matter is more possible in the case of these than in the case of the metrical Upaniṣads. This, however, does not imply that the Upaniṣads that are written in verse, are quite pure. In their case, too, an admixture of Mantra texts is quite possible. But this is a less formidable

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evil than an admixture of ritualistic passages of the Brāhmaṇas, as we shall see later on.

It is necessary also to remember here the distinction between Mantra, Brāhmaṇa and Upaniṣad. Mantra and Brāhmaṇa are defined by the Mīmānsā (ii. 1. 32-33). The definitions are far from satisfactory; and all commentators frankly admit that, after all, the Mantras are just those passages of the Vedic books to which the learned have applied the name; and the rest of the Vedic literature is Brāhmaṇa. Broadly speaking, however, a Mantra is either an invocation or a praise of a deity and a Brāhmaṇa is a dissertation on the efficacy of these Mantras, supported by means of anecdotes, and it lays down rules and explains them also, for the proper performance of any ceremony and for the right employment of these Mantras. An Upaniṣad, however, is an explication of the deeper realities of soul and the world.

If this description of an Upaniṣad be accepted, then obviously we may expect an Upaniṣadic expression even in strictly Brāhmaṇical dissertations as *obiter-dicta*; and it may also find a place in what has been specifically called Mantras. This is actually what has happened. There are some Mantra-Upaniṣads, e.g., the Īśā, and there are also some Brāhmaṇa-Upaniṣads, e.g., the Kauṣītaki. In fact, Śankara in his commentaries frequently uses these names.

There is another way in which an Upaniṣad may be distinguished from a Mantra or a Brāhmaṇa, strictly so called. It speaks of Atman or Brahma: it is a dissertation on Ātma-vidyā or Brahma-vidyā. One thing, however, may be boldly affirmed: a book which discusses the performance of a ceremony, goes into its details, lays down rules for it, enumerates the materials to be used in it—surely, such a book is not an Upaniṣad, properly so called; it is nothing else but a Brāhmaṇa. We shall presently give examples to illustrate our meaning.

As between a Mantra and an Upaniṣad, the distinction is not very sharp. For instance, the passages of the Īśā Upaniṣad are Mantras in form and essence; they are part of a Mantra book; but as Śankara points out in his commentary, they are not employed in any ritual; they only reveal the nature of the Ātman; and so they constitute an Upaniṣad ("Īśā-vāsyam ityādayo mantrāh karmasu aviniyuktāh tesam akarmaśeṣasya ātmano yāthātmya-prakāśakatvāt, etc."). Of the two characteristics of the passages of the Īśā suggested here,—viz., their non-employment in any ceremonial and the revelation of the nature of the Ātman which they contain,—it would seem that the former is more important than the latter. That is to say, a text will be called Upaniṣad, more because it is not employed in any ritual than because it speaks about the soul and Brahma. For, truths about the soul and Brahma have found

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expression in Mantras also which were strictly Mantras, i.e., employed in ceremonials. For instance, the 'Nāsadīya sūkta' (Ṛk. x) is not essentially different from Taitt. Up. ii. 7, or Ch. Up. vi. 2, or Br. i. 2, etc. Yet it is not an Upaniṣadic text, at least is not considered as such, but is a Mantra. Scores of such examples may be piled from the Vedic texts, strictly so called. But they are all classed as Mantras and are not regarded as Upaniṣads. And there is no other reason for this but the fact that they are employed at sacrifices (cf. Mīmānsā-Sūtra, ii. 32).

Besides, the very fact that in plenty of cases, the Upaniṣads themselves quote a Mantra passage now and then to make their own meaning clear and to support their conclusions, shows that no sharp distinction in meaning was supposed to exist between a Mantra passage and an Upaniṣad passage. For instance, Br. ii. 5. 16, *ibid* iv. 4–23, Śvet. iii. 14-15, etc., are but Ṛk-Mantras quoted *verbatim*. Sometimes the quotation is introduced with the remark that the idea has been well expressed in a Ṛk, which is then quoted (cf. Br. iv. 4. 23). Obviously the purpose in all these cases is to give a more pointed and authoritative expression to the thought suggested in the preceding passages.

It is not contended here that all Mantras are Upaniṣádic in character; a vast number among them are not. But the point is that there are some Mantras which might well find a place in an Upaniṣadic selection, but have not found such a place. Some Mantras, no doubt have been fittingly quoted by the Upaniṣads, but some have been left out also. Upaniṣadic passages according to our description, therefore, may yet be looked for in the strictly Mantra portion of the Vedas. Of course, what has been left out, cannot possibly have adulterated the Upaniṣads, though they have been somewhat poorer for that. What, however, is more unfortunate than this omission is the inclusion of texts which are Mantras, pure and simple, and have little that is Upaniṣadic about them (e.g., Īśā, 18; Br. vi. 4. 21; etc.).

As we have pointed out above, the adulteration of Upaniṣadic texts by an admixture of Mantras is not so serious an evil as the adulteration by an admixture of Brāhmaṇa passages. In some of the prose Upaniṣads, whole chapters are there which have very little that is Upaniṣadic in them. They are Brāhmaṇas, pure and simple; they describe ceremonies to be performed, state and explain the Mantras to be used therein and do little else besides. Thus: Br. vi. 3 and 4, are purely Brāhmaṇical in character; vi. 4 is a description of the ceremony of Garbhādhāna and may well be compared with Gobhilīya Gṛhya-Sūtra, ii. 5. 9, and Mahānirvāṇa Tantra, ix. 86–116). Similarly, the first chapter of the same Upaniṣad, though it contains some very important and oft-quoted pas-

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sages, such as i. 2. 1, i. 4. 1., etc., is yet chiefly Brāhmaṇical in character. It, too, engages itself in elucidating the meaning of certain ceremonies and the Mantras used therein.

Take again chapter ii of the Kauṣītaki. Except the name 'Upaniṣad' occurring in the first passage, and passages 11 and 12 where something about Brahma is said, what else is there in this whole chapter that can really be called Upaniṣadic? In chapter i, of this book, we have an eschatological discussion about the journey of the soul after death and back. In chapter iii, epistemological questions are attempted; in chapter iv, we have the famous Bālāki-Ajātaśatru incident. These chapters are Upaniṣadic in character. But if the second chapter were taken out from here and mixed up with the other chapters of the Śāṅkhāyana Brāhmaṇa of which this Upaniṣad is a part, we would not have missed much and it would hardly have been recognised as an Upaniṣadic text at all. It describes in detail certain ceremonies like 'Ekadhanāvarodhana' (ii. 3), 'Daivasmara' (ii. 4), 'Pitāputrīya' (ii. 15), etc. Surely, this is not the function of an Upaniṣad proper.

Ch. Up. v. 11–24, also is open to the same charge, being in essence a dissertation on the inner meaning of the ceremony of Agnihotra.

These cases show that some passages of the Upaniṣads as we know them, might well be excluded from them without detriment to the philosophy which they seek to develop. The presence of these passages in the Upaniṣads may not be a case of actual smuggling or interpolation; but they betray a defective editing or an imperfect selection, whichever way we may like to put it. In other words, the Upaniṣads are not always purely Upaniṣadic; in some cases, they are vitiated by intermixture with Mantras and in some cases, by an obtrusive presence of Brāhmaṇa-texts.

This is not all. As there are some Mantras which might well be read as Upaniṣadic dissertations, though they have not been so treated; in the same way, there lie buried in the Brāhmaṇas some passages which, too, might well be incorporated into the system of Upaniṣadic literature. Let us take an example.

We know that the Ait. Up. is but chapters 4–6 of the second Āraṇyaka of the Aitareya Āraṇyaka. But if we read the other chapters of the same book, we shall find that some of them also might well be included in the Upaniṣad of that name. The three chapters immediately preceding, it seems, have been excluded arbitrarily. The same remark applies to some of the following chapters also. Fortunately, however, Sāyana recognises the Upaniṣadic character of these chapters and says in the introduction to his commentary on the second Āraṇyaka that the first Āraṇyaka has concerned itself with Karma, whereas the second and third Āraṇyakas are concerned

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with Upaniṣadic matters. "Karma-kāndam samāpyaiva vedo Jñānam vivakṣati. Āraṇyakam dvitīyam ca trtīyam ca tadātmakam; jñāna-kāndam tatah so'paniṣad-ityabhidhīyate."

Some of these chapters are quite similar to passages which have been included in Upaniṣads of other schools. For instance, ii. 1. 2, 3 of this Araṇyaka bears a close resemblance with portions of Br. Up. i. If we can include the first chapter of the Br. in the Upaniṣadic portion, we may also add to the volume of the Ait. Up. by the inclusion of a few more chapters of the Āraṇyaka of which it is a part. The exclusion of those chapters may have been only accidental.

More examples of this kind are not necessary, and the examples that we have taken are enough to show that (i) all that the Upaniṣads contain, as they have come down to us, is not Upaniṣadic in character; and that (ii) all that was Upaniṣadic in the Vedic literature, has not found a place in the books that we now call Upaniṣads. The mass of the Vedic literature might be strained for more Upaniṣadic passages; and there are passages in the Upaniṣadic literature as we know it, which might be strained off from it as not really belonging to it. In other words, if a modern man could arrogate to himself the liberty to make a fresh selection of Upaniṣadic passages from the Vedic literature, perchance he might even make a better selection than what has come down to us. At any rate, it is almost certain that he would not have adopted just the same passages that are now found in the Upaniṣads.

What does this mean? It means that modern scholarship has erred in some important respects with regard to the nature and origin of the Upaniṣads. (1) In the first place, it does not seem to be correct that the Upaniṣads arose outside the circle of Brāhmaṇical influences—among the Kṣatriyas as opposed to the Brāhmaṇas. (2) In the second place, it does not seem to be true that they arose in opposition to the ritualistic religion of the Vedas, though subsequently a breach was effected between the two; and (3) in the third place, the necessary corollary of the above two hypotheses is also untrue, namely, that the Brāhmaṇas adopted the Upaniṣadic philosophy only when it had attained sufficient strength and vigour and had practically become irresistible. All these hypotheses are wrong, because the somewhat promiscuous intermixture of Upaniṣadic and Brāhmaṇic passages in Śruti literature, cannot be explained according to them.

The truer view seems to be that the Upaniṣads sprang in the very same intellectual soil in which the Brāhmaṇas also grew; and, in all likelihood, the same class of men was engaged in the cultivation of both. In other words, the relation between the Upaniṣads and the other portions of Vedic literature is very much closer than has been generally admitted.

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Modern scholarship has been unduly harsh towards the ceremonial writings known as the Brāhmaṇas. They have been often ignored and oftener misjudged. They are not so barren of fruitful philosophy as we are generally inclined to think: and they have not been so huge a waste of mental labour as is so often suggested. The very vastness and profusion of their growth show that there was a society which needed them; and this need was not the need of a spoilt child. Rites and sacrifices actually in vogue needed not only a proper control and regulation, but also an interpretation and a justification; and the Brāhmaṇas exercised both these functions. The former—the regulation of the rites—may be useless for us now; but the latter—the interpretation and justification of the religious rites of the time—was one of the deeper roots of the Upaniṣads.

The Upaniṣads did not grow outside the Brāhmaṇas and were not engrafted on them from outside; they grew on them like fruits on the bough of a tree, and dropped off from them when they were ripe. That is to say, they arose out of Brāhmaṇical speculation and were separated from the Brāhmaṇas, only when they were sufficiently matured.

Such drifting away of thought-systems from their original moorings is not an unknown phenomenon. It has recurred even in the history of Vedāntism itself. Have not the Sūtras of the Vedānta gone a little ahead of the Upaniṣads? And have not the commentators of the Sūtras again, in their turn, gone ahead of the Sūtras and, therefore, still further off from the Upaniṣads? This has been possible by a double process of isolation or insulation: In the first place, the Sūtras isolated the Upaniṣads from the rest of the Vedic literature; and in the second place, the commentators of the Sūtras isolated passages of the Upaniṣads and used them just as they suited their purpose, without much regard to the book as a whole. Unfortunately, the passages can be so isolated, because, they seldom constitute an organic whole. Yet, when you take several of them together, they do not yield the same meaning as when you take any one of them in isolation. This sort of permutation and combination of texts has been the underlying game of the different commentators of the Vedānta School.

The Gītās furnish another instance, as has been pointed out above, of the isolation of texts from the stock to which they originally belonged. Yet another example, and in some respects a more interesting example of such picking up of passages from their original bed-rock, and stringing them together into different systems, is found in the later schools of Law. The Bengal school or the Mithilā school of law would quote from more or less the same original authorities, e.g. Manu, Yājñavalkya or Parāśara, but yet their differences are well-known. These later writers on law do not take the system of Yājñavalkya or Manu as a whole, but only quote passages

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from them whenever they are in need of some support of some authority; and they naturally quote just those passages that would serve their purpose. They knew well enough that they were drifting away from the original authorities; in fact, that was just the consummation that they intended; but they dared not cut off openly from the ancient authorities. So they proceeded to develop their position by interpretation of texts.

Similar was the way in which the author of the Sūtras and the commentators of the Vedānta School treated the Upaniṣadic texts. They never built on any one of the Upaniṣads taken as a whole by itself: they only quoted passages: they needed the support of Śruti: and it was enough if they could point to a Śruti text; it was neither necessary for them to quote from one Upaniṣad rather than another nor was it necessary for them to consider all the passages of any one Upaniṣad. Of course, the idea of a synthesis of diverse passages bearing on the same subject but existing in different books of the Upaniṣadic literature, was not absent from their mind. In fact, that is exactly what they profess to do (Vedānta-Sūtra, i. 1, 4). But they have not referred to all the passages of all the Upaniṣads. All of them were not necessary for them, nor have they used all.

It is not suggested that they were unfair in their quotations or even in their interpretations of these texts. All that is contended here is that the way in which they dealt with these texts, made it unnecessary for them to have any careful selection of complete Upaniṣads. It was enough for them that the passages were there in Śruti literature; enough that the ore was lying in the mine; enough that the gems were there to be picked up whenever required; enough that they could be strung together into a system. It was not necessary for their purposes to fathom the dark caves of the ocean that bore them.

But we moderns have to be more careful. We who look upon the Brāhmaṇas as the product of a Dark Age and extol the Upaniṣads as an "*Illumination*" or *Aufklärung*, ought to be more careful in our likes and dislikes, in our applause and in our denunciation. The two branches of Śruti literature were perhaps never so diametrically opposed to each other as they are according to modern thinking; and modern thought in this matter appears to be without a historical justification.

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Hindu Values of π

By BIBHUTIBHUSAN DATTA, D.Sc.,
(*University College of Science, Calcutta*).

EARLY VALUES—ŚULVASŪTRAS (*c.* 500 B.C.).

The problem of 'squaring the circle' was favourite with all the ancient nations of the world. In India it originated and acquired special importance in connection with the Vedic sacrifices at a very early period, before the earliest hymns of the Ṛgveda were composed (about 4500 B.C.).[1] But we do not know anything about the value which was adopted for π in those hoary ages. The earliest definite information is found in the *Śulvasūtras* (*c.* 500 B.C.). Āpastamba says[2]:

"If you wish to turn a square into a circle, stretch a cord from the centre towards one of the corners, draw it round the side and describe the circle together with the third part of the piece standing over."

Baudhāyana and Kātyāyana give the same rule in different words. This works out

$$\pi = 4/\{1+\tfrac{1}{3}(\sqrt{2}-1)\}^2 = 3{\cdot}0883\ldots$$

Baudhāyana has another expression (obtained from the reverse process) of an almost equivalent value, viz.

$$\pi = 4\left(\frac{7}{8}+\frac{1}{8\,.\,29}-\frac{1}{8\,.\,29\,.\,6}+\frac{1}{8\,.\,29\,.\,6\,.\,8}\right)^2,$$
$$= 3{\cdot}0885\ldots$$

Another simpler and less accurate value has been given by all the three sūtrakāras,

$$\pi = 4\left(\frac{13}{15}\right)^2 = 3{\cdot}004.$$

These values are far wide of the true one, 3·141592653... obtained in the 15th century. It will also be noted that though the last two expressions bear a striking similarity to the form obtained from the statements of the Egyptian Ahmes (*c.* 1550 B.C.),

$$\pi = 4\left(1-\frac{1}{9}\right)^2 = 3{\cdot}1605\ldots,$$

the Hindu values are less satisfactory.

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1 *Vide* Oldenberg, *Die Ṛgveda*, iii. 356.

2 Thibaut, The Śulvasūtras, *Journ. Asiat. Soc. Beng.* (1875); Reprint, p. 26.

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Period 500 A.D.—1200 A.D.

From the early centuries of the Christian era, the Hindu astronomers and mathematicians have adopted more accurate values of π. Different writers adopted different values whose order of approximation varies widely. Thus we find such expressions as $\sqrt{10}$, 22/7, 3927/1250, 21600/6876. Along with these a few writers continued to use the rough approximation 3 in those cases specially where accuracy was not of much practical consequence. We shall record here a short history of the use of each of these values without any attempt to discover the method how it was arrived at, though this aspect of the problem is not less important.

The value of $\pi = \frac{3927}{1250}$ (=3·1416).

This value is found stated for the first time in the work of Āryabhaṭa the elder (*b.* 476 A.D.). He writes[1]:

"100 plus 4, multiplied by 8, and added to 62,000: this will be the approximate value of the circumference of a circle of diameter 20,000."

That is, $\pi = 62{,}832/20{,}000$. We do not know why Āryabhaṭa did not reduce the expression to its simplest form, viz. 3927/1250, the form in which it has been adopted by the subsequent mathematicians.[2] Most probably he got it by actual measurement by a method of interpolation and retained the form in which it was first discovered. This value of π was adopted and applied by Lalla (*c.* 578 A.D.) who professed to be a disciple of Āryabhaṭa and acknowledged his authority on several occasions.[3] It was carried to Arabia by the Hindu astronomer who went to Bagdad in 772 A.D. and was adopted by Ya'qub ibn Tariq, who, along with Alfāzāri, introduced Indian Astronomy into Arabia.[4] Al-Khowarizmi (*c.*

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[1] *Āryabhaṭiya*, ed. Kern (1875), *Gaṇitapāda*, verse 10.

[2] It will be shewn later on how this unreduced form has saved Āryabhaṭa from being accused as a plagiarist.

[3] Lalla, *Śiṣyadhīvṛddhida*, ed. Sudhakara Dvivedi, Benares (1886); i 1, 2; ii. 3; iv. 3, 4; xiii. 22.

There has been much difference of opinion about the time of Lalla. Sudhakara Dvivedi states the date *c.* 499 A.D. (*Gaṇaka Taraṅginī*, Benares, 1892, p. 8); Sankar Balkrisna Dikshit thinks that Lalla lived about 638 A.D. (*History of Indian Astronomy*, Poona, 1896, p. 227). After a careful perusal of the above authorities, Jogeschandra Roy concludes the date of Lalla to be *c.* 578 A.D. (*Āmāder Jyotiṣī O Jyotiṣa*, Calcutta, 1903, p. 181).

[4] Al-Biruni's *India*, English trans. by Sachau (1910), Vol. I, p. 169 and Vol II, p. 67. "The diameter of the earth is 2100 *farsakh*, its circumference 6596 $\frac{9}{25}$ *farsakh*." One *farsakh*=one-half *yojana*. At other places (I. 312, 316) Al-Biruni has called them *yojanas*. Again 6596 $\frac{9}{25}$ must

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825 A.D.) recorded the original form of Āryabhaṭa $\frac{62832}{20000}$ and remarked it as being due to the Indian "astronomers."[1] In 966 A.D., the eminent scholiast Bhaṭṭotpala used it in his celebrated commentary of Varāhamihira's *Bṛhat Saṃhitā*.[2] From this writer[3] and also from Al-Biruni[4] we learn that this value of π was applied in the *Puliśa-siddhānta* known to them. It should be remarked that this was not the original *Siddhānta* of Puliśa, nor the one known to Varāhamihira or even to Brahmagupta, from either of which it differed materially. In fact, it was a recast of the same work with various changes and additions.[5] Finally we may point out that Bhāskara (*b.* 1114 A.D.) adopted the value 3927/1250 along with 22/7.[6]

Value of $\pi = \sqrt{10}$ (=3·16227 . . .)

This value of π was adopted as a close approximation (*sūkṣma*) by Brahmagupta (628 A.D.).[7] It seems, however, that he was aware of the unsatisfactoriness of this value and did, in fact, know a closer approximation though nowhere has it been expressly stated by him.[8] Still we wonder why he did not adopt Āryabhaṭa's extremely accurate value. Proceeding earlier, we find this value of π in Varāhamihira's *Pañca-siddhāntikā*,[9] in connection with the summary of the *Puliśa-siddhānta*. Hence this must have been the value adopted in the original work. But in the recasted *Puliśa-siddhānta*, as has already been stated, it was discarded in favour of Āryabhaṭa's value. In all the early *Siddhāntas*,[10] at least in their modern forms as

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be a misprint for 6597 $\frac{9}{25}$ and then the value of π applied will be 3927/1250. Ya'qub got these values from his Hindu informant and they agree with Āryabhata's values for the dimensions of the Earth.

1 Cf. Rodet, Leçons de Calcul d' Āryabhaṭa, *Journal Asiatique*, seventh series xiii (1878), p. 411; Rosen, *The Algebra of Mohammed Ben Musa*, London (1831)

2 *Bṛhat Saṃhitā* with Bhaṭṭotpala's commentary, ed. Sudhakara Dvivedi, Benares (1895), p. 53.

3 *Ibid*, pp. 53–55.

4 *Loc. cit.*, I. 168; II. 72.

5 *Vide* Varāhamihira's *Pañca-siddhāntikā*, ed Thibaut and Dvivedi, Benares (1889), Introduction, p. xxvii; Sankar Balkrisna Dikshit, loc. cit., p. 163.

6 *Līlāvatī*, ed. Sudhakara Dvivedi, Benares (1912), verse 40: *Siddhānta-śiromaṇi*, ed. Bapu Deva Sastri, *Candragrahaṇādhikāra*, verse 3 (*Vāsanābhaṣya*), p. 207.

7 *Brāhma-sphuṭa-siddhānta*, ed. Sudhakara Dvivedi, Benares (1902), xxi. 15, p. 363.

8 Cf. *ibid*, xxi. 16.

9 *Loc. cit.*, iv. 1. This value seems to be common with all the Siddhāntas.

10 *Vide Jyotiṣa-siddhānta-saṃgraha*, ed. Vindeswariprasad Dvivedi, Benares (1912): *Soma-siddhānta*, i. 50; *Brahma-siddhānta* (of the *Śākalya-saṃhitā*), i. 61; *Pitāmaha-siddhānta* (of the *Viṣnudharmottara Purāṇa*), p 3; *Vṛddha Vasiṣṭha-siddhānta*, i. 52; xii. 38.

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well as in the *Sūrya-siddhānta*[1] (the old and the modern), are found application of the value $\sqrt{10}$. Thus in India $\sqrt{10}$ seems to be oldest closer approximation to the value of π and it also remained the most widely employed value up to the 11th century. It was adopted by Śrīdhara (*c.* 750),[2] Mahāvīra (*c.* 850 A.D.),[3] and Āryabhaṭa the younger (*c.* 950 A.D.).[4] Later on, however, it was abandoned.

The origin of the value $\sqrt{10}$—an explanation.

It seems very surprising that the value $\sqrt{10}$ of π continued to be popularly used in India up to the 11th century and that even by those mathematicians who were aware of closer approximations. Specially it is so in the case of Brahmagupta who was otherwise very astute and accurate, who was held in high respect and whose authority, more than that of any one else, was freely acknowledged by the celebrated Bhāskara, the greatest of Indian astronomers and mathematicians. The earliest explanation by an Indian author comes from this latter writer. Bhāskara states that $\sqrt{10}$ was adopted as the value of π because of its simple form (*sukhārtham*). At the same time he has warned his readers not to conclude that Brahmagupta and Śrīdhara, who adopted this value, were ignorant of the accurate expression of Āryabhaṭa (*vide infra*, p. 15). In the opinion of the scholiasts Nṛsiṃha (*c.* 1600 A.D.) and Raṅganatha (*c.* 1625 A.D.), $\sqrt{10}$ began to be employed for π, because 10 is the nearest whole number to the square of its actual value and from which it differs by a small quantity only.[5] This seems to be the most probable explanation and it has been endorsed as such in modern times by Burgess and Whitney. These writers say[6]: "It is to be observed with regard to this latter ratio ($1 : \sqrt{10}$), that it could not possibly be the direct result of any actual process adopted for ascertaining the value of the diameter from that of the circumference or the contrary. It was probably fixed upon by the Hindus because it looked and sounded well, and was at the same time a sufficiently near approximation to the truth to be applied in cases where exactness was neither attainable by their methods, nor of much practical consequence; as in fixing the dimensions of the Earth,

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[1] *Sūrya-siddhānta*, trans. with notes by Burgess and Whitney, i. 59, p. 56.

[2] Śrīdhara, *Triśatikā*, ed. Sudhakara Dvivedi, Benares (1899), p. 34.

[3] Mahāvīra, *Gaṇita-sāra-saṃgraha*, trans. by Rangachārya, Madras (1908), vii. 60.

[4] *Mahā-siddhānta*, ed. Sudhakara Dvivedi, Benares (1910), xv, 88.

[5] $(3927/1250)^2 = 9{\cdot}86965 = 10$ nearly;
$(22/7)^2 = 9{\cdot}87755 = 10$ nearly.

[6] *Sūrya-siddhānta, loc. cit.*, p. 57.

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and of planetary orbits. The nature of the system of notation of the Hindus, and their constantly recurring extraction of square roots in their trigonometrical process, would cause the suggestion to them, much more naturally than to the Greeks, of this artificial ratio, as not far from the truth; and their science was just of that character to choose for some uses a relation expressed in a manner so simple, and of an aspect so symmetrical, even though known to be inaccurate. We do not regard this ratio in question, although so generally adopted among the Hindu astronomers, as having any higher value and significance than this."

Value of $\pi = 22/7$ (= 3·14285 . . .)

This value is found expressly stated for the first time in India in the work of the younger Āryabhaṭa (*c.* 950 A.D.).[1] After that we find it in Bhāskara's *Līlāvatī* (1150 A.D.).[2] It has been stated by Al-Biruni that this value of π was known to Brahmagupta.[3] He has further quoted an explanation from this latter astronomer why it was discarded by him in favour of the value $\sqrt{10}$. The explanation is, of course, the same as the one already stated. But neither the value 22/7 nor the explanation is found in the extant copies of Brahmagupta's works. Nor anything of the kind has been recorded by his eminent scholiast, Prithudaka Swami, who was anterior to Al-Biruni. Elsewhere it has been stated by Al-Biruni that "according to Brahmagupta, the relation of the diameter to the circumference is nearly equal to that of 12,959 : 40,980."[4] This is nearly equal to 1 : $\sqrt{10}$. Hence the early part of his first statement must be an explanation of Al-Biruni himself as to the origin of the value $\sqrt{10}$ for π, which he has put into the mouth of the authority as is sometimes his wont. Not having found it in the works of Brahmagupta, Colebrooke presumed that the value 22/7 must be due to Āryabhaṭa (the elder).[5] This is a wrong presumption. For in the *Āryabhaṭīya*, there is found no other value of π than 62,832/20,000. Inspite of these facts and observations to the contrary, Kaye persisted in wrongly attributing to Brahmagupta the value of $\pi = 22/7$.[6] It may be noted in passing that Al-Biruni himself adopted this value. For he says: "If the circumference of the earth is 4800 *yojanas*, the diameter is nearly 1527."[7] Or again, "the radius of the earth is, according to the circumference which we have mentioned [5000 *yojanas*], 795° 27′ 16″ (*yojana*)."[8]

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1 *Mahā-siddhānta*, xv. 92, 94, 95.
2 *Loc. cit.*
3 Al-Biruni's *India*, *loc. cit.*, I. 169.
4 *Ibid*, II. 71.
5 Colebrooke, *Algebra*, etc., p. xxxviii.
6 Kaye, *Indian Mathematics*, Calcutta (1915), p. 33.
7 Al-Biruni's *India*, I. 312.
8 *Ibid*, I. 275.

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Changing the sexagesimal notation to our decimal notation, the value of the radius will be $795\frac{409}{900}$, so that the diameter will be $1590\frac{818}{900}$. Evidently the value of π employed in either instances is 22/7. It is noteworthy that though 22/7 was commonly used for π in Greece from the time of Archimedes (*c.* 225 B.C.), it is found recorded in an Indian work of the 10th century, or at best it may have been recorded in a work, not earlier than, of the eighth century.[1] This is an important fact against the supposed probability of a Greek influence.[2]

Value of π=21600/6876 (=3·14136...): Its origin.

There is another Hindu value of π which deserves more than an ordinary notice. It is this π=21,600/6,876=3·14136... This value has been stated only by the younger Āryabhaṭa,[3] and by none else. It will be noticed that this value forms a very close approximation to Āryabhaṭa's value. It has, in fact, been derived from this latter value. For near about the same time, Bhaṭṭotpala (966 A.D)[4] took $3437\frac{967}{1307}$ as the radius of a circle of circumference 21,600. The younger Āryabhaṭa simply substituted the nearest whole number for the fraction. Thus 21,600/6,876 is another expression derived from 3927/1250, with

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[1] The information as regards the knowledge and use of 22/7 as the value of π in India in the 8th century is derived mainly from the Arabic source. It has been stated by Al-Biruni that according to "the astronomical hand-book *Al-arkand*," the diameter of the Earth is 1050 *yojanas* and its circumference 3300 (I. 312, 315). This book has been stated by him to be the Arabic version of Brahmagupta's *Khaṇḍa-khādyaka* (II. 7). Again we read: "Brahmagupta uses 4800 as the number of *yojanas* of the earth's circumference in his canon *Khaṇḍa-khādyaka*, but in the amended edition he uses, instead of this, the *corrected* circumference agreeing with Puliśa [$5026\frac{14}{25}$]" (I. 312). These statements are contradictory. Two explanations are possible. Either (i) Al-Biruni has made some confusion between *Al-arkand* and *Khaṇḍa-khādyaka*, or (ii) the former work contains interpolations besides a literal translation of the latter. In support of the first supposition it may be stated that, from phonetic consideration Sachau "prefers to suppose the Sanskrit original of *Arkand*, a word like *Ārya-khaṇḍa*" (II. 339; cf. II. 304, 313). In the extant *Khaṇḍa-khādyaka* (ed. Pandit Babua Misra, Calcutta University Press, 1925, p. 26) we find the circumference of the Earth as 4800 *yojanas*. In any case, if the substance of the first statement of Al-Biruni can be traced to the Hindu source, it may be said that 22/7 was known as the value of π in India in the 8th century. The value used might have been also 3927/1295 (*vide infra*, p. 12 *sq.*).

[2] Cf. Rodet, Leçons de Calcul d' Āryabhaṭa, *loc. cit.*, p. 411.

[3] *Mahā-siddhānta*, xvi. 36.

[4] *Loc. cit.*, p. 53.

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a slight change. Certainly the new form was introduced not at random. It came as a corrollary to another scientific undertaking. We shall state and explain that first. Almost all the astronomical books of the Hindus contain a table of sines. Beginning with Āryabhaṭa the elder, leaving alone Brahmagupta, it became the common Indian fashion to calculate the sines for the radius 3438. Before him the fashion seems to have been to take the radius as 120. Thus in the summary of the *Puliśa-siddhānta* as found in the *Pañca-siddhāntikā*,[1] there is a table of sines calculated for the latter value of the radius. This seems further to have been common to the other two scientific Siddhāntas as well, namely, the *Romaka-siddhānta* and the *Sūrya-siddhānta*. For, Varāhamihira had recourse to it all throughout the book wherever it was necessary to use the sines.[2] The elder Āryabhaṭa's departure from the old custom and his innovation to take 3438 for the radius were dictated by a real scientific spirit which is also marked in his other works. And this innovation has "a distinct and important advance on the method of the older siddhāntas."[3]

It was appreciated and adopted by Lalla, the younger Āryabhaṭa and Bhāskara. We also learn it from Al-Biruni, that it was followed by Balabhadra (*c.* 700 A.D.), in the recasted *Puliśa-siddhānta* and in Vijayanandin's *Karaṇa-tilaka* (*ca.* 966 A.D.).[4] In short, Āryabhaṭa's innovation was appreciated and adopted by most of the writers that followed him. Let us now enquire what suggested this improvement to Āryabhaṭa. According to the usual method of measuring arcs, the circumference of a circle contains 21600 minutes. So it is natural to take that number to represent the circumference. Having done this, the most natural and scientific value, of course to the nearest whole number, for the radius shall be 3438. To take any other value will be unscientific and artificial. With any other value we shall have not only to assume different units for the circumference and the radius but also shall be liable to adopt an inaccurate value for π. Having obtained a highly accurate expression for the ratio of the circumference to the diameter of a circle, it naturally suggested to Āryabhaṭa the elder to introduce an innovation into the table of sines which will be in keeping with it.[5] We fail to understand why

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[1] *Loc. cit.*, iv. 1–11.

[2] For example see vi, 5; vii. 1, 6; viii. 12–14; ix. 13–15 and xviii. 13, 14. Also compare, Introduction, p. xxxvi.

[3] Burgess, "The sines of arcs in the Pañca-siddhāntikā," *Ind. Ant.*, 20 (1891), p. 228.

[4] Al-Biruni's *India*, I. 156, 275; II. 205. Al-Biruni says: "the *sinus totus*, according to Puliśa and Āryabhaṭa, has the relation of the diameter to the circle of 360 degrees" (I. 275).

[5] Kaye suggests that Ptolemy's value of π was used in reducing the table of sines into the new form. That must be wrong. Rodet is of same opinion as myself.

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so great a mathematician as Brahmagupta failed to appreciate the scientific truth underlying this innovation and chose 3270 for the radius.[1] To keep similarity, most probably, it occurred to the younger Āryabhaṭa to choose a new form to replace the elder Āryabhaṭa's expression for π.

Dimensions of the Earth and value of π deduced therefrom: Charge of inconsistency.

There is another set of values of π which are ordinarily deduced from the dimensions of the earth as recorded in the Indian astronomical books. It will be noticed (Table I), as also pointed out and commented upon by Bhāskara,[2] that different authors have given different values. Such has also been the case with the ancient Greek investigators. But we are here more concerned with the ratio of the circumference of the earth to its diameter than with their actual values.

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[1] Brahmagupta has offered an explanation himself (*vide Brāhma-sphuta-siddhānta*, xxi. 16). But it is vague and at the same time unsatisfactory and unconvincing. It may be noted that the form given by him to the table of sines is not even consistent with the value of π adopted by him. For $\frac{21600}{6540}=3{\cdot}3027\ldots$ whereas $\sqrt{10}=3{\cdot}16227\ldots$

We know that Brahmagupta's form has not been adopted by any other Indian mathematicians who followed him closely in many other respects.

[2] *Siddhānta-śiromaṇi, Grahagaṇita, Madhyamādhikāra, Bhūparidhi*, sl. 1 (*Vāsanābhāṣya*). Bhāskara attempts to explain the apparent differences amongst the various investigators as regards the measurements of the dimensions of the same Earth as being due to difference in the choice of units.

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Table I.

Authority.	Circumference of the Earth in *yojanas*.	Diameter of the Earth.	$\pi = \frac{\text{Circumference}}{\text{Diameter}}$
Varāhamihira [1]	3200	$1018\frac{6}{10}$	3·14156...
Lalla [2]	3300	1050	22/7
Brahmagupta [3]	5000	1581	3·16255...
Mahā-siddhānta [4]	6625	2109 nearly	3·14129...
Puliśa-siddhānta [5] (recasted).	$5026\frac{14}{15}\left(?\ 5026\frac{14}{25}\right)$	1600	3·14183...
Bhaṭṭotpala [6]	5027	1600	3·14187...
Bhāskara [7]	4927	1581	3·14168...
		$1581\frac{1}{24}$	3·1415994...

It appears from the last column that the values of π calculated from the dimensions of the earth are different from those which have been expressly stated by the respective investigators. Indeed this divergence between the values given and used appears not a little surprising. And for this the Indian authors have been charged with inconsistency by Burgess and Whitney,[8] Kaye [9] and Smith.[10]

Inconsistency more apparent than real.

The Indians have been very unjustly condemned in this matter by the foreign scholars. For on closer examination it becomes evident that the inconsistency is more apparent than real.

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[1] *Pañca-siddhāntikā*, xiii. 15 *sq.* The value of the circumference was common to other Siddhāntas (*vide* iii. 14, ix 10). I fail to trace the value for the diameter in Thibaut and Dvivedi's edition; but it has been recorded by Sankar Balkrisna Dikshit (*History*, p. 320). He is reliable in matters of Indian Astronomy.

[2] *Śiṣyadhivṛddhida*, i. 56.

[3] *Brāhma-sphuṭa-siddhānta*, i. 36; xxi. 32. [4] *Loc. cit.*, i. 56; xvi. 35.

[5] Al-Biruni's *India*, I. 312; II. 67. $5026\frac{14}{15}$ must be a misprint for $5026\frac{14}{25}$ (*vide infra*). In the *Puliśa-siddhānta* known to Varāhamihira, the circumference of the earth is given as 3,200 *yojanas*.

[6] *Loc. cit.*, p. 55.

[7] *Siddhānta-śiromaṇi, Golādhyāya Bhūvanakośa*, verse 52; *Grahaṇa-vāsanā*, verse 16 (*Vāsanābhāṣya*); *Madhyamādhikāra, Bhūparidhi*, verse 1. In the opinion of Bhāskara $1581\frac{1}{24}$ is the most accurate value of the radius of the earth. But ordinarily the fraction has been neglected.

[8] *Sūrya-siddhānta*, loc. cit., p. 39.

[9] Kaye, *Indian Math.*, p. 32; *Journ. Asiat. Soc. Beng.*, VIII (1908), pp. 122, 3.

[10] Smith, *History of Mathematics*, Boston, Vol. II (1925), p. 308.

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On the other hand the dimensions of the earth supply the much needed concrete illustrations of practical application of the abstract values adopted for π (Table II). It is to be observed that the usual method of getting at these data is to determine, first of all, the circumference of the earth by direct triangulation. In principle the plan followed in this latter operation was essentially the same as the one followed to-day, whether in India or elsewhere. The amplitude and the length of the arc of a meridian is determined first and from these data the circumference of the earth is computed. Having thus determined the circumference, the diameter of the earth is then calculated with the help of known values of π. There is no other direct method. Hence in every case of dimensions of the earth, the value for the circumference should be accepted as more correctly representing the exact opinion of the investigator.

Table II.

Authority.	Circumference of the earth (determined).	Value of π applied.	Diameter of the earth (calculated).	Diameter (adopted).
Varāhamihira ..	3200	3927/1250	$1018\frac{6}{10\cdot14}$	$1018\frac{6}{10}$
Lalla.. ..	3300	22/7 3927/1250	1050 1050·42 ...	1050
Brahmagupta ..	5000	$\sqrt{10}$	1581·12	1581
Mahā-siddhānta..	6625	21600/6876 3927/1250	2109 − 1/24 2109 − 793/3927	2109[1]
Bhāskara ..	4967	3927/1250	$1581\frac{1}{24\cdot09}$	$1581\frac{1}{24}$ or 1581

In the case of Bhaṭṭotpala and the recasted *Puliśa-siddhānta* there are reasons to believe that the reverse, though unnatural, process has been followed. They adopted the value for the radius of the earth from a foregoing investigator and then deduced the circumference with help of the value of π adopted by them. Thus

$$1600 \times \frac{3925}{1250} = 5026\,\frac{14}{25} = 5027 \text{ nearly}$$

or $$5027 \times \frac{1250}{3925} = 1600\cdot24\ldots = 1600 \text{ nearly.}$$

[1] Cf. *Mahā-siddhānta*, xvi. 36:
"A little less than 2109 is the diameter (of the Earth)."

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Therefore in every case the calculated value forms a very close approximation to the adopted and recorded value. Hence it is proved that the charge of inconsistency against Indian astronomers and mathematicians is unfounded.

It should also be noted in fairness that the case of Lalla remains a little doubtful. For with him it is not easy to decide once for all whether the value 22/7 or 3927/1250 of π was applied in calculating the diameter of the earth from its circumference determined independently. With the one there is an exact coincidence between the calculated and adopted values of the diameter, and with the other a very close approximation. Remembering the degree of accuracy that was usually observed in those ages, especially as regards such matters, both may be asserted to be probable with almost equal force. But as Lalla has used the value 3927/1250 in calculating the dimensions of the planetary orbits,[1] and as he has not mentioned or applied anywhere else 22/7 as the value of π, one will be safe to conclude that Lalla has taken $\pi = 3927/1250$ in calculating the diameter of the Earth.

Dimensions of the Earth according to Āryabhaṭa.

There are various wrong notions as regards the dimensions of the earth as stated by Āryabhaṭa the elder and the value of π used by him in their calculation. Al-Biruni says: "Brahmagupta relates with regard to Āryabhaṭa, criticising him, that he fixed the circumference as 3393; that he fixed the diameter in one place as 1080, in another place as 1050."[2] He explains the second statement to be a "blunder in the text, not of the author," and further points out that the value of π employed by Āryabhaṭa was $\frac{377}{120}$. Colebrooke has stated, again on the authority of Brahmagupta and his scholiast, 3393 to be the circumference of the earth's wind (spiritus vector) whose diameter is 1080 whereas 1050 is the diameter of the earth. He further presumed the value of π taught by Āryabhaṭa to be 22/7, so that the circumference will be 3300. Here Colebrooke has quoted in his support a scholiast of Bhāskara, Ganeśa (1545 A.D.).[3] These statements are not found in the printed edition of Brahmagupta's works. There is also another consideration which throws considerable doubt on what Colebrooke presumes.[4] Evidently the values of π employed in this connec-

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[1] *Śiṣyadhīvṛddhida*, iv. 3, p. 28. [2] Al-Biruni's *India*, I. 168.

[3] Colebrooke's *Algebra*, etc., p. xxxviii *sq.*

[4] Sudhakara Dvivedi has stated in the preface that his edition is collated from three MSS., and he has also consulted Colebrooke's MS. of Prithudaka-swami's commentary.

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tion are $\frac{377}{120}$ and $\frac{22}{7}$. There cannot be any good reason why one should employ two values of π in two contiguous parts of the same instance. The whole controversy will, however, be set at rest by the fact that according to the *Āryabhaṭīya*,[1] the diameter of the Earth is 1050 *yojanas* and the circumference of its wind 3375 *yojanas*. Parameśwara (*c.* 1430 A.D.), a commentator of the elder Āryabhaṭa, has quoted him as recording 3299 as the circumference of the Earth.[2] Evidently the value of π applied is what has been stated by Āryabhaṭa in his *Gaṇita*, viz., 62,832/20,000.[3] This will belie the statement of Kaye, "it is rather extraordinary that Āryabhaṭa himself never utilised this value."[4] Kaye has wrongly attributed the value 3 to Āryabhaṭa.

So-called Greek influence in Āryabhaṭa's value of π.

Being struck at the high degree of accuracy in Āryabhaṭa's value of π, many foreign scholars have suspected, more or less, the probability of certain Greek influence in it. The tenor of their minds has been put in a nutshell by Smith: "In case the value 3·1416 is due to either of the Āryabhaṭas, it may have been obtained from the Alexandrian scholars by whom it was then known and whose works may well have reached India, or it may have been found independently."[5] Besides an expression of what may be called their pious wish, a very few of these writers have thought it proper to examine the whole subject closely and dispassionately. And strangely enough even those few have suffered from ignorance or other shortcomings. It has been remarked by Rodet that "the choice of two myriads for the diameter is an argument strongly in favour of the Greek origin of Āryabhaṭa's expression for π, for the Greeks alone of all people made myriad the numerical unit of second order."[6] Here he has been followed

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[1] *Daśagītikā*, verses 5, 9.

[2] *Vide Goladīpikā*, ed. by T. Ganapati Sastri, *Trivandrum Sanskrit Series* (1916), verse 30, p. 4.

[3] Since

$$3375 \times \frac{1250}{3927} = 1074{\cdot}29\ldots = 1074 \text{ nearly},$$

so the depth of the atmosphere will be nearly 12 *yojanas*, which again agrees with the value recorded by Lalla, the younger Āryabhaṭa, Bhāskara and Parameśwara. Indeed, all Indian astronomers agree as regards the depth of the atmosphere. This is an additional proof against the presumptions of Colebrooke and Al-Biruni. Cf. Lalla's *Śiṣyadhīvṛddhida*, xxi. 2 (*Grahabhramasamsthādhyāya*).

[4] Kaye, *Indian Math.*, p. 12; cf. also Kaye, "Āryabhaṭa." *Journ. Asiat. Soc. Beng.*, VIII (1918), p. 122.

[5] Smith, *loc. cit.*, II. 308-309.

[6] Rodet, *loc. cit.*, p. 411.

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and quoted by Heath, who is almost sure of Āryabhaṭa's indebtedness to an unknown Greek writer.[1] Probably it is not known to Heath, nor to Rodet, that *ayuta*, which is the word actually used by Āryabhaṭa, occurs many times in the Vedic as well as in the Post-Vedic literatures.[2] In the Epics, it has been used times without number and has sometimes been given especial significance.[3] Thus it was in circulation in India long before the Greeks invented their myriad, or even before the Greek civilisation was born. It is not easy to understand then how one can scent foreign influence on the score of the use of such a word as *ayuta*. From other considerations, however, Rodet came to the conclusion—Heath omitted to refer him here—that Āryabhaṭa was at least ignorant of the works of Archimedes and his followers.[4] The works of these latter writers loomed so largely in the writings of the later Greek investigators that the question of the probable Greek influence in Āryabhaṭa's value of π, or in his mathematical writings, becomes highly doubtful. Before Archimedes, the Greek value of π was not satisfactory. From whom then did Āryabhaṭa receive, if so at all, his inspiration? Kaye has struck a novel line of argument. He thinks that as it has been stated by Al-Biruni that a value of π equivalent to Āryabhaṭa's value, has been employed in the *Puliśa-siddhānta*, and that as it has been stated by that distinguished traveller and also supported by some modern Indologists that that book had been transmitted from a Greek source, Āryabhaṭa must have got his expression for π also from there.[5] This surmise is scarcely admissible, for it is wholly vitiated by wrong premises. As has been already stated, the *Puliśa-siddhānta* which was known to Al-Biruni, was different from the original *Siddhānta* of Puliśa which was first transmitted, if it was so at all, from Greece.[6] Further we have it from Varāhamihira, who was anterior to Al-Biruni by five centuries, that in the *Puliśa-siddhānta* known to him, the value of π was put at $\sqrt{10}$ (*vide supra*). We have so far considered the evidence derived from the Indian sources. Looking into the Greek sources we do not find any Greek expression for π which was as accurate in value

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1 Heath, *History of Greek Mathematics*, Oxford (1921), Vol. I, p. 234.

2 *Vide* Macdonald and Keith, *Vedic Index*, Vol. I, p. 343.

3 Compare such words as *ayutādhyāpaka*, *ayutanāyin*, *ayutaśas*, etc.; even proper names with *ayuta* are found in the Epics. Cf. *St. Petersberg Sanskrit Dictionary*.

4 Rodet, *loc. cit.*, pp. 409, 411.

5 Kaye, Āryabhata, *Journ. Asiat. Soc. Beng*, VIII (1908), p. 126.

6 Compare the following candid statement of Kern: "On the other hand, that Puliśa was a Greek, I do not doubt for a moment, notwithstanding that the Puliśa-siddhānta, judging from quotations and rather numerous ones, is so thoroughly Hinduised that few or no traces of its Greek origin are left" (*Bṛhat Saṃhitā*, Pref., p. 49 *sq.*).

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or as alike in form as the one recorded by Āryabhaṭa. The only Greek value which comes very near to, but is not exactly equal to, Āryabhaṭa's value is that of Ptolemy. This writer expressed it in sexagesimal notation and gave $\pi = 3^\circ\ 8'\ 30''$. When expressed as a proper fraction it works out as 377/120 which is very different from Āryabhaṭa's form 62,832/20,000. This aspect of the question is not negligible. It cannot be said that Āryabhaṭa changed the form arbitrarily and intentionally in order to suppress plagiarism, for they are not equal in value, and what is of utmost importance, Āryabhaṭa's form is not directly deducible from that of Ptolemy.[1] Moreover it has been pointed out by Whitney, a confirmed believer and ardent exponent of Greek, or probably Chaldean and Babylonian, influence in Indian Astronomy, that whatever might have transmitted from that side into India, must have come before the advent of Ptolemy.[2] We have already stated Rodet's conclusion that Āryabhaṭa was ignorant of the Alexandrian School of Mathematics. On the other hand there are others, like Burgess, who believed that Indian Astronomy and Mathematics developed independently.[3] The whole subject has been discussed at length by Sankar Balkrisna Dikshit.[4] In any case this much at least can be asserted safely that there is nothing to prove that Āryabhaṭa got inspiration from any foreign source, in establishing his value of π.

Date of Āryabhaṭa's value of π.

According to the statements made therein, the *Āryabhaṭīya* was composed in the year 499 A.D., so anything recorded in that book must bear at least that, if not an earlier date. But Kaye has made one covert attempt in the shape of creating doubt about the authenticity and date of the *Gaṇita* section of this work, wherein alone is found the rule for the value of π.[5] During recent years no one has written more copiously on the various topics of Indian mathematics

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[1] 377/120=3·141666... and 62,832/20,000=3·1416. Thus expressed in decimals, the difference between the two expressions appears negligible. But retaining the fractional form

$$\frac{377}{120} = \frac{3927{\cdot}08}{1250} = \frac{62,833{\cdot}33\ldots}{20,000}.$$

Within the order of approximation though the middle form can be replaced by the reduced value of Āryabhaṭa's form as adopted by Lalla and others, the original unreduced form of Āryabhaṭa cannot replace the last term, for the difference is too great.

[2] *Sūrya-siddhānta*, p. 330 *sq.*; cf. p 74.

[3] *Ibid.*

[4] *Loc. cit.*, p. 492 *sq.*

[5] Kaye, Āryabhaṭa, *Journ. Asiat. Soc. Beng.* (1908), p. 117; *Indian Math.*, p. 11; "The two Āryabhaṭas," *Bibl. Math.*, xiii (3) (1910), p. 203.

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than Kaye. He has shown more capacity for collecting facts and marshalling them to his own end. At the same time he has excelled all the previous writers on the subject in vilifying it by faulty translations, by twisting the proper significance, by suppression of contexts and by condemning other workers and their followers, if they happen to hold opinions different from his. Hence anything falling from such a man should not be lightly brushed aside, especially as his opinions are slowly gaining ground amongst a certain section of people who are innocent of Sanskrit and who are not, nor can be expected to be, directly in touch with the fountain heads of Indian Mathematics. Kaye's surmise about the date and authenticity of the *Gaṇita* has been critically examined, and found totally false in another paper.[1] Certain points of that paper require re-statement and also further amplification as they have a direct bearing on the subject under discussion. Kaye has stated: "Another noteworthy rule given by Āryabhaṭa is the one which contains an extremely accurate value of the ratio of the circumference of a circle to the diameter, viz.

$$\pi = 3\frac{177}{1250} \ (=3{\cdot}1416) \ ;$$

but it is rather extraordinary that Āryabhaṭa himself never utilised this value, that it was not used by any other Indian mathematicians before the 12th century and that no Indian writer quotes Āryabhaṭa as recording this value."[2] Or again, "the Indians record an extremely accurate value at a very early date but seldom or never actually use it."[3] These statements are utterly wrong. For we have already seen how Āryabhaṭa has utilised his important discovery about the value of π in putting the table of sines in a rational and scientific form, and how he has been followed in this respect by all the *Siddhānta* writers, excepting Brahmagupta. We have also learned that Āryabhaṭa applied his value for π in calculating the dimensions of the Earth and its atmosphere, and further that it was adopted and utilised by Varāhamihira, Lalla, the younger Āryabhaṭa, Bhaṭṭotpala and Bhāskara. This last-named writer has remarked: "Thus it has been admitted by Āryabhaṭa and others that for the diameter 20,000, the circumference will be 62,832. What again has been admitted by Śrīdharāchārya, Brahmagupta and others that the square root of ten times the square of the diameter is the circumference, is gross. That because it is simple and facile,

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1 *Vide* the author's paper, "Āryabhaṭa, the author of the *Gaṇita*," *Bull. Cal. Math. Soc*, XVIII (1927), No. 1, pp. 5-18.

2 Kaye, *Indian Math.*, pp. 12-13.

3 *Ibid*, p. 32.

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not because they do not know (the other value)."[1] Bhāskara has nowhere quoted his authority in making such an important assertion that Brahmagupta and Śrīdhara were aware of Āryabhaṭa's value of π. We, however, learn it from Al-Biruni that Brahmagupta applied that value in his *Uttara-khaṇḍa-khādyaka*—an emended edition of his first book *Khaṇḍa-khādyaka*—in which it has been stated that the diameter of the Earth is 1600 *yojanas* and the circumference $5026\frac{14}{25}$.[2] Apparently the value of π employed is $\frac{3927}{1250}$. Thus we learn it undoubtedly that $\frac{62,832}{20,000}$ was adopted as the value of π as early as 499 A.D.

Later Hindu values—Closer approximations.

In later years the Hindus stated more accurate values of π some of which are correct up to the 8th or 10th place of decimals. In the *Tantra-samuccaya* (1426 A.D.),[3] we find applications of the values $\pi=\frac{22}{7}, \frac{355}{113}$. The second one deserves more than a passing notice. It is really the Chinese value, and forms a slightly closer approximation than the Hindu value, $\pi=\frac{62,832}{20,000}$. It was discovered in China as the "accurate" value of π in the 5th century A.D. by Tsu Ch'ung-chih. Subsequent Chinese mathematicians failed to appreciate its true significance though they adopted the other admittedly "inaccurate" value stated by Tsu, which is also the Greek value, viz. $\pi=\frac{22}{7}$. So it was gradually overlooked and was practically forgotten for several centuries until it was rediscovered and brought into prominence by Chang Yu-chin about 1300 A.D.[4] In Europe, it was discovered by Adriaen Anthoniszoon (*c.* 1600 A.D.) and his son Adriaen Metius (1571–1635 A.D.).[5] Another noteworthy

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[1] *Siddhānta-śiromaṇi, Golādhyāya, Bhubanakośa,* verse 52 (*Vāsanā-bhāṣya*)

[2] Cf. Al-Biruni's *India,* I. 156, 312; II. 67.

[3] Nārāyan, *Tantra-samuccaya,* ed. by T. Ganapati Sastri, *Trivandrum Sanskrit Series* (1919); Paṭala 2, sls. 65, 67-68; Paṭala 12, sl. 27. The author has misquoted the rule of the *Sulva-sūtra*

[4] Mikami, *The Development of Mathematics in China and Japan,* Leipzig (1913), p. 135; also compare p. 52.

[5] Anthoniszoon first obtained the approximations $\frac{333}{106}<\pi<\frac{377}{120}$ by the method of Archimedes; he then took the mean of the numerators and denominators and thus obtained the value $\pi=\frac{355}{113}$.

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point is that the *Tantra-samuccaya* is not a work on mathematics but "a collection of subjects dealing with the rituals of consecration, daily worship, festivals and other kindred matters of the deities in temples which are elaborately explained in the ancient original Tantric literature."[1] So the credit of the discovery of the value $\pi=\frac{355}{113}$ in India does not belong to its author Nārāyan, who seems to be more of a compiler than an original investigator, but must go to an earlier mathematician, whose name we do not know at present. Hobson has remarked: "This latter value $\left(\frac{355}{113}\right)$ was not obtained either by the Greeks or the Hindoos, and was only rediscovered in Europe more than a thousand years later."[2] A similar remark has also been made by Mikami.[3] Evidently they are wrong so far as the Hindus are concerned.

Tantra-saṃgraha (1608 A.D.),

$$\pi=\frac{355}{113}, \frac{104348}{33215} (=3\cdot14159265391\ldots)$$

It has been remarked by the author that the first value is accurate but the second is still more accurate. It has been pointed out by Mikami that these fractional values of π can be obtained as successive approximations from the value $\pi=3\cdot1415926535\ldots$ up to the 25th correct figure.[4]

Karaṇa-paddhati (1733 A.D.), $\pi=3\cdot1415926536$.

Sadratna-mālā (1832 A.D.), $\pi=3\cdot14159265358979324$.

Values in series.

The Hindus also obtained some interesting series as values of π. For these, in fact, for all the results taken from *Tantra-saṃgraha*, *Karaṇa-paddhati* and *Sadratna-mālā*, I am indebted to Whish's paper "*On the Hindu Quadrature of the Circle.*"[5] These books are still in MSS. and I have had no access to them.

Tantra-saṃgraha gives the series

$$\pi=4\left(1-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\ldots\pm\frac{p/2}{p^2+1}\right)$$

where p is the last odd divisor diminished by unity. This series converges slowly, so the author found it necessary to correct the last quotient thus

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1 *Tantra-samuccaya*, Preface.
2 Hobson, *Squaring the Circle*, Cambridge (1913), p. 24.
3 Mikami, *loc. cit.*, p. 50. 4 Mikami, *loc cit.*, p. 202.
5 *Trans. Roy. Asiat. Soc.* III (1835), p. 509.

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$$\pi=4\left(1-\frac{1}{3}+\frac{1}{5}-\frac{1}{7}+\frac{1}{9}-\frac{1}{11}+\cdots\pm\frac{q^2/4+1}{(q^2+4+1)q/2}\right)$$

where q is the last odd divisor increased by unity.

This series without the last term, in any form, is found also in the *Karaṇa-paddhati*. In Europe, the series—without any of the last terms—was given by Leibniz (1673 A.D.) and De Lagny (1682 A.D.). It is a special case of Gregory's (1671) series

$$\pi=\sqrt{12}.\left(1-\frac{1}{3.3}+\frac{1}{5.3^2}-\frac{1}{7.3^3}+\frac{1}{9.3^4}-\frac{1}{11.3^5}+\cdots\right).$$

This series was discovered in Europe by Abraham Sharp (*c.* 1717) who used it in calculating the value of π to 72 decimal places

$$\pi=3+4.\left(1-\frac{1}{3^3-3}-\frac{1}{5^3-5}+\frac{1}{7^3-7}-\frac{1}{9^3-9}+\cdots\right).$$

This series is also given in the *Karaṇa-paddhati*

$$\pi=16.\left(\frac{1}{1^5+4.1}-\frac{1}{3^5+4.3}+\frac{1}{5^5+4.5}-\frac{1}{7^5+4.7}+\cdots\right)$$

$$\pi=2+4.\left(\frac{1}{2^2-1}-\frac{1}{4^2-1}+\frac{1}{6^2-1}-\frac{1}{8^2-1}+\cdots+\frac{1}{(p-1)^2+4}\right),$$

where p=last even number squared in the series.

$$\pi=8\left(\frac{1}{2^2-1}+\frac{1}{6^2-1}+\frac{1}{10^2-1}+\frac{1}{14^2-1}+\cdots\right)$$

$$\pi=4-8\left(\frac{1}{4^2-1}+\frac{1}{8^2-1}+\frac{1}{12^2-1}+\cdots\right).$$

It is evident that these two series when combined will give the previous series.

The *Karaṇa-paddhati* gives, in addition to those already noted, another interesting series, viz.

$$\pi=3+6.\left\{\frac{1}{(2.2^2-1)^2-2^2}+\frac{1}{(2.4^2-1)^2-4^2}+\frac{1}{(2.6^2-1)^2-6^2}\cdots\right\}.$$

This series is equivalent to

$$\pi=3+6.\left(\frac{1}{1.3.3.5}+\frac{1}{3.5.7.9}+\frac{1}{5.7.11.13}+\frac{1}{7.9.15.17}+\cdots\right).$$

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The Auto-bibliography of Mawlānā 'Abd al-Ḥaḳḳ ad-Dehlavī.

Edited by M. HIDAYAT HUSAIN.

In his translation of the third volume of Badaonī's *Muntakhabu-'t-tawārīkh*, Vol. III, Sir Wolseley Haig remarks (p. 167) that "he has not been able to find elsewhere any mention of 'Abdu-l-Ḥaqq's works besides what Badāonī gives." As will presently be seen there exists an auto-bibliography of this writer, and it has even been published in India, in lithographed editions, twice.[1] Both the editions have remained almost unknown to Western scholars, and are at present sold out and no longer obtainable. It is, therefore, not superfluous to make the book more permanently and generally accessible to the learned public in the pages of this *Journal*. Sir H. M. Elliott in his *History of India*, Vol. VI, p. 492, made a brief reference to this treatise, but devoted only a few lines to its description. In the same volume of the same work further references to the Shaikh are to be found on pp. 175, 366, 483 and 491.

The following brief remarks may serve as an introduction:—

Among the prominent Indian scholars, who have devoted their lives to the study of Islamic subjects, the name of 'Abd al-Ḥaḳḳ ad-Dehlavī stands in the fore-front with regard to the Science of Ḥadīth (Tradition). In the Asiatic Society of Bengal, I found a manuscript work of this author entitled "T'alīf Ḳalb al-Alīf," No. M 41, in which he gives a list of his own works on different subjects.

I think a short biography of this great writer by way of preface to that treatise, will be of some interest to the students of Arabic and Persian literature.

His full name was Shaikh 'Abd al-Ḥaḳḳ and he was the son of Saif ad-Dīn, son of Sa'dallāh at-Turk al-Bukhārī. One of his ancestors Āghā Muḥammad Turk Bukhārī, came over to Dehlī from Bukhārā during the reign of Sulṭān Alā' ad-Dīn Khiljī. This ancestor was a saint of great repute with a large number of followers, and all his relatives and disciples accompanied him to this country. He was welcomed by Sulṭān Alā' ad-Dīn, who bestowed royal favours upon him. He then settled at Dehlī, and when the Sulṭān sent an army to conquer Gujarāt and its

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[1] Mujtbā'ī Press, Dehli, 1309 A.H., and 'Azīzī Press, Rāmpūr State, A.D. 1902.

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neighbouring parts, he was also sent with it. By the order of the king he settled there, but after some time he found that he could not pull on well with the officials of the place and returned to Dehlī. The Sulṭān again gave him a great welcome and offered him high rank and favour. After that, having experienced great bereavements by the death of all his children save one, Malik Mu'izz ad-Dīn by name, he retired from the world and went to the monastery of Shaikh Ṣalāḥ ad-Dīn Suhrawardī, and stayed there for some time. But being advised by Ṣalāḥ ad-Dīn he again returned to his family at Dehlī and died in 739 A.H. His son Malik Mu'izz ad-Dīn had a son whose name was Malik Mūsā. After the death of his father he lived peacefully and enjoyed much favour during the reign of Fīrūz Shāh. But when great tumult arose in the country on the death of this monarch Malik Mūsā went away to Transoxiana. When, however, Tīmūr came to conquer India, he also came with him to Dehlī, and settled there as he did not like to accompany Tīmūr back. Among the many children of Malik Mūsā, one was Shaikh Fīrūz who was the great-grandfather of our author. This Shaikh Fīrūz was a renowned soldier, expert in the tactics of war, and at the same time a great poet. He flourished during the beginning of the reign of Sulṭān Bahlūl, and died in a battle at Bahrā'ich in the year 860 A.H. A posthumous son born to him was named Sa'dallāh; he was the grandfather of our author. This Sa'dallāh read with all the great literary men of Dehlī and became a disciple of Miṣbāḥ al-'Āshiḳīn Shaikh Muḥammad Mangan, the great saint. He passed his days in devotion and prayer and died in 928 A.H., leaving a son of eight years whose name was Saif ad-Dīn. This Saif ad-Dīn was a renowned religious leader and poet, whose poetical name was "Saifī." He was the author of a Mathnavī called "Silsilat al-Wiṣāl." He died in 990 A.H. At the time of his death our author was 32 years of age (born in 958 A.H.). He received his first lessons in Arabic and Persian from his father. At the age of 22 he finished his studies. He had then learned the Holy Ḳur'ān by heart and began to teach students. He received the Ḳādirī ordination from Shaikh Mūsā Ḳādirī, who was one of the descendants of 'Abd al-Ḳādir al-Jīlānī, in 985 A.H. He set out on a pilgrimage to Mecca in A.H. 996, stayed there for a long time and studied Ḥadīth with eminent scholars especially with 'Abd al-Wahhāb al-Muttaḳī. He also resided in the sacred city of Madīna for a long time. He was also a good poet and his *nom de plume* (takhallûṣ) was Ḥaḳḳī. His bibliographical list shows his versatility and ability as a writer. He died in 1052 A.H.

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بسم الله الرحمن الرحيم

تاليف قلب الاليف بكتابة فهرسة التواليف

للشيخ عبد الحق الدهلوي قدّس الله سرّه العزيز

THE AUTHOR'S INTRODUCTION.

الحمد لله منزل الكتب السماوية - و الصحف المكرّمة المرفوعة المطهّرة - على الارواح القدسيّة العلويّة - الوسيلة لهداية النفوس السفليّة الارضيّة - و الصلوة التامة المباركة الزكيّة البهيّة - على الجوهر الاولى و الاخرى المحمدي حافظ اللوح المحفوظ مبيّن الكتاب المبين - و على اهل بيته الاطهار - و صحابته الاخيار - و اتباعه الابرار - مفسرى الكتاب - و مفصّلى الخطاب - و محى علوم الدين *

سپاس و ستايش مر پروردگار على الاطلاق و مفيض اقسام ارزاق را كه عطاى او را پايان نيست و فيض او را انقطاع نه - خداى بى مانند و همتا كه بخشندهٔ عطايا و بخشايندهٔ خطايا است - تَعَالَىٰ شَانُهُ - و عَظُمَ بُرْهَانُهُ - و جَلَّ جَلَالُهُ و كَثُرَ اَفْضَالُهُ * و درود نا محدود - و رحمت نا محدود - بر فهرست ديوان رسالت - و ملخّص كتاب سفارت - كه مهترِ عالميان - و دانش اموزِ انس و جان - و استاد پيشينيان - و راه نماى پسينيان است - و بر فرزندان و ياران او كه مجموعهٔ فضل و كمال - و جامع مراتب علم و حال - و كتب علوم دين - و ابواب و فصول كتاب مبين اند - اَفَاضَ اللّٰهُ عَلَيْنَا مِنْ اَنْوَارِهِمْ وَ اَسْرَارِهِمْ - وَ نَفَعَنَا بِبَرَكَاتِهِمْ و بَرَكَاتِ عُلُومِهِم * بعضى از اصحاب فضل و كرم كه اهتمام بشان فضل و علم و عنايتى بحال اين ضعيف داشتند بعضي از مسوّدات اين مسكين را طلب مي نمودند - تا مطالعه كنند يا استكتاب نمايند - چون در نظرِ دانش و بينش چيزى چنان نبود كه بكار آيد و اگر بود در آنجا اقسام فنون متعدد بود از علوم -

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بعضی بلسان عربي و برخي بزبان پارسي - و همه بهمه کس کار آمدني نه - فهرستي در تعداد آن نگاشته عرض داشتم تا هرچه ازآن اختيار افتد و بمذاق وقت موافق آيد بخدمت فرستم - و بعد ازآن نيز هر کس ازين الوان که بر مائده ام هرچه خوش دارد فايده بر دارد - وَ انَا مُعترِفٌ بقلّةِ بضاعتی - و عدمِ استطاعتی - و ضعفِ بالي - و شتاتِ حالی - و قصورِ نظری - و فتورِ فکری * ملتمس از اهل فضل و ارباب کرم آنکه عيوب و زلّات اين مسکين را بپوشند و در اصلاح و تصحيح آنچه از خطا و سهو راه يافته باشد بکوشند - و ارجو من اللّٰه الکريم حسنَ القبول - و نيل المامول - اوست عيب پوش و عذرنويش - و هو الکريمُ الوهّاب *

Text of the List.

A. Books.

(۱) فمنها لمعات التنقيح في شرح مشکوٰة المصابيح و هو اجل و اعظم و اطول و اکبر هذه التصنيفات - و قد جاء بتوفيق اللّٰه و تائيده کتاباً حافلاً شاملا مفيدا نافعا في شرح الاحاديث النبوية علی مصدرها الصلوٰة و التحية - مشتملة علی تحقيقات مفيدة - و تدقيقات بديعة - و فوائد شريفة - و نکات لطيفة - و احواله و کيفياته مکتوبة في ديباجته - قريب من ثمانين الف بيت *

(۲) و منها اسماء الرجال و الرُّوات المذکورين في کتاب المشکوٰة - اثنا عشر الف بيت و کسر *

(۳) و منها اشعّة اللمعات في شرح المشکوٰة شرح فارسي مشکوٰة است که در قدر و مرتبه تلو شرح عربي ست - و در تنقيح و تهذيب و ضبط و ربط راجح و فائق - و در حجم و ضخامت زيادة ازآن - آن نيز بتائيد و نصرت آلهي سبحانه شرحی نفيس لطيف مهذّب مرغوب و مقبول آمده - کتابت آن مقدار صد و سي هزار بيت باشد *

(۴) و منها جامع البرکات منتخب شرح المشکوٰة مجموعهٔ آمده است شامل فوايد کثيره - و عوايد غزيره - در هر باب يک دو متن حديث ذکر کرده و در

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باقي احاديث بر مضامين آن اقتصار كرده و اختصار نموده شده است - كتابت آن مقدار سي و دو هزار بيت باشد *

(٥) و منها مدارج النبوة و مراتب الفتوة در سِيَر حضرت سيد مختار - و امام المتقين والابرار صلّى اللّٰه عليه و سلم - مقدار چهل و دو هزار بيت *

(٦) و منها مطلع الانور البهيّة في الحلية الجليّة النبويّة مقدار يک هزار بيت *

(٧) و منها ذكر اجازات الحديث في القديم و الحديث *

(٨) و منها اسماء الاستادين رحمة الله عليهم اجمعين *

(٩) و منها فصول الخطب لنيل اعالى الرتب *

(١٠) و منها تنبيه العارف بما وقع في العوارف في باب اخلاص الصوفية قدّس اللّٰه اسرارهم الصفيّة من الحكم علي ما صدر من اخبارهم و عن احوالهم تحديثاً بنعمة الله انها من باب السكر و غلبة الحال - و بيان ان هذه الرسائل الاربعة مقدار ثلثة او اربعة آلاف تخمينا *

(١١) و منها الطريق القويم في شرح الصراط المستقيم نام اصل كتاب متن سفر السعادت است و مشهور ميان مردم بصراط مستقيم شده - و در وقت كتابتِ شرح چون باسم اول مذكور و منظور شد بهمن نام مسطور گشت - و اگر اسم ثاني را در نظر آرند سلوک طريق الافادة في شرح سفر السعادة نام نهند - و كتاب مذكور تصنيف شيخ مجد الدين شيرازي صاحب قاموس است - و مقصد وی درين كتاب آنست كه اعمال شريفهٔ حضرت نبوّت را از عبادات و عادات با حديث اثبات كرده و تصحيح نموده و بردّ و انـكار بر آنچه مخالف آن از مذاهب اربعه واقع شده تصريح كرده است - پس در شرح تائيدِ مذاهبِ اربعه و اثبات آن باحاديث خصوصاً مذهب حنفي و معارضهٔ كلام مصنّف كه ادّعای صحّت احاديث موافق مدّعای خود نموده و رقم رد و بطلان بر خلاف آن كشيده است كرده شد - و اين حكايت در ديباچهٔ كتاب بهتر ازين گفته شده است -

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کتابی آمد حافل شامل نافع جامع طریقهٔ فقه و حدیث - مقدار کتابت وی قریب سی هزار بیت خواهد بود *

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(۱۲) و منها جذب القلوب الی دیار المحبوب تاریخ مدینهٔ مطهّره در بیان سماء فضائل و مناقب این بلد کریم و احوال ساکنان وی از زمان قدیم و ذکر فضائلِ مسجد منیف و مقامات متبرّکه و احکام و آدابِ زیارت قبر شریف و اقامت در آن عالی‌مقام و رجوع بوطن بالخیر و السلام . و بسط کلام در اثبات حیات انبیاء علیهم السلام و ذکر فضائل و آداب صلوٰة بر سید المرسلین صلی الله علیه وسلم و ذکر بعضي از صِیَغ صلواتِ ماثوره از صحابه و سلف صالحین رضی الله تعالی عنهم اجمعین - و این کتاب در متانت و رصانتِ الفاظ موافق شرافت و کرامت معاني آن نزدیک بدرجهٔ قبولِ اهل وصول واقع شده است - نزدیک بهفت هزار و پانصد بیت *

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(۱۳) و منها احوال الائمة الاثنی عشر خلاصة اولاد سید البشر منقول و منتخب از کتاب مستطاب فصل الخطاب و ترجمهٔ عبارات عربي وی و ترک سخنان فارسي علی حالها که بامر واجب الامتثال بعضی از اربابِ کمال نوشته شده - مقدار دو هزار و پانصد بیت *

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(۱۴) و منها زبدة الآثار منتخب بهجة الاسرار في مناقب الغوث الاعظم و النور الاتمّ الشیخ محي الدین عبد القادر الحسنی الجیلاني رضی الله عنه - و کتاب بهجة الاسرار کتابی است مقرر معتبر مذکور مشهور بین المشایخ و العلماء - صنّفها بعض عظماء المشائخ المقرّبین - و بینه و بین الشیخ رضی الله عنه واسطتان - و قد کتبت ترجمته في طبقات المقرئین للذهبی - اختصرها الشیخ محمد الجزری - و قال قرات هذا الکتاب علی الشیخ عبد القادر الدسطوطی و کان من کبار المشایخ بمصر - اکثر من ثلثة آلاف بیت *

---

(۱۵) و منها شرح فتوح الغیب مسمّی بمفتاح الفتوح لفتح ابوّاب النصوص . و فتوح الغیب از تصانیف عظیمهٔ حضرت غوث اعظم رضی الله تعالی عنه است که

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در تحقیقِ مقالات دین و کمالاتِ اهل یقین موافق لسان رسالت و زبان نبوّت است چنانکه شان معارف صدّیقان است فرموده اند - ده هزار بیت *

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(١٦) و منها الانوار الجلّیّة في احوال المشایخ الشاذلّیّة ذکر فیه ثمانیة رجال من عظمائهم و علمائهم - باعث بر تصنیف این رساله و تحصیل این سعادت وقوع ذکر این اعزّه بود در رسائل این فقیر و نقل کلمات و حکایات ایشان چنانکه در خطبهٔ رساله گفته شده است - کلمات لطیف و فواید شریف و سخنان غریب از انفاس یقینیهٔ این قوم دارد که بغایت نافع و سودمند است - قریب بچهار هزار بیت *

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(١٧) و منها زاد المتقین في سلوک طریق الیقین در احوال شیخ عارف کامل متبّع علی متقي و خلیفهٔ راستین وی شیخ ولي مقتدا عبد الوهاب متقي قدّس اللّٰه سرّهما و بعضی دیگر از مشایخ از دیار عرب و عجم و اهل حرمین شریفین زادهما اللّٰه تشریفاً و تعظیما - رساله ایست بسی مفید و نافع مر قاصدانِ صراطِ مستقیم و سالکانِ طریقِ قویم را - درین رساله تقریب بعضی احوال این غریب و تشرّف بخدمت حضرت شیخ نیز مذکور شده است - مقدار چهار هزار بیت *

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(١٨) و منها اخبار الاخیار في احوال الابرار در ذکر احوال مشایخ و علما و صلحای این دیار - نسخهٔ اصل مقدار پانزده هزار بیت بود و متوسط دوازده هزار و منتخب اخیر که قرار یافته نه هزار و کسری - و مثبت درین مجموعه نسخهٔ متوسط است - و این اول تصنیفی است که رقم زدهٔ کلک این مسکین شده است - اگرچه بحسب لفظ و عبارت نه در آن مرتبه است و لیکن بسبب اشتمال بر احوال و حکایات و کلمات بزرگان بغایت شیوع و اشتهار موسوم گشته است *

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(١٩) و منها تاریخ سلاطین هند اصل مسوّدهٔ مقدار سه هزار بیت بود و بعد از ضمّ احوال سلاطین اکناف و اطراف این ولایت که در جمع سابق ناقص مانده بود بچهار هزار بیت و چیزی رسید - و مسمّی بذکر ملوک که متضمن تاریخ اوست گشت *

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(٢٠) و منها تحقيق الاشارة الى تعميم البشارة في اثبات البشارة بالجنة لغير الاصحاب المشتهرين بالعشرة المبشّرة و عدم اختصاصهم بها - و بيان سبب اشتهارهم بذلك و عِدّة مباحث متعلقة بهذا الباب مع ذكر شيء من قواعد اصول الحديث في مقدمة الكتاب و ايراد نبذة من فضائل اهل بيت الرسالة سلام اللّٰه عليهم في خاتمة الكتاب - و اللّٰه الملهم للصواب - و اليه المرجع و المآب - زهاء ثلثة آلاف بيت *

(٢١) و منها جمع الاحاديث الاربعين في ابواب علوم الدين جمعت فيه مقاصد مختلفة في ابواب العلم و ارجو من اللّٰه ان يوفّقني بشرحها انه خير موفّق و معين - مقدار خمس‌مائة بيت *

(٢٢) و منها ترجمة الاحاديث الاربعين في نصيحة الملوك و السلاطين *

(٢٣) و منها المطلب الاعلى في شرح اسماء اللّٰه الحسنى و صفاته العلى - هزار و پانصد بيت *

(٢٤) و منها ترغيب اهل السعادات على تكثير الصلوات على سيد الكائنات صلّى اللّٰه عليه و سلم - مشتمل بر فوايد اين عمل عظيم الشان و ذكر صِيغ ماثوره در آن و ذكر صلوات منقول از بعضى مشايخ عظام عليهم التحية و الاكرام - قريب هزار بيت و پانصد بود و بعد از آن ضعفين آن بدان ملحق گشته *

(٢٥) و منها الاجوبة الاثناعشر في توجيه الصلوٰة على سيد البشر رسالة حوت توجيهات التشبيه الواقع في الصلوة على النبي الكريم اللّٰهم صلّ على محمد و آل محمد كما صليت على ابراهيم و آل ابراهيم - جمعتها في مجلس واحد من وقت السحر الى طلوع ذكاء مع ما وقع في البين من الصلوٰة و الورد و الدعاء - مقدار اربعمائة بيت و كسر *

(٢٦) و منها تحقيق ما ثبت بالسنة من الاعمال في ايام السنة اوردت فيه الاحاديث الواردة فيما جاء فيه من الاعمال في الايام و الاشهر و لياليها مثل الصلوٰة و الصيام في يوم عاشورا و ليلة النصف من شعبان وغير ذلك من

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الزمان صحاحا و حسانا و ضعافا و موضوعات - نحوا من الفي بيت او اكثر قريب من ثلثة آلاف بيت *

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(۲۷) و منها التعليق الحاوى على تفسير البيضاوى على ربع الجزء الاول نحوا من عشرة آلاف بيت و نسال الله التوفيق بان يضاف اليه ماشا الله من غير تكلف و اعتساف *

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(۲۸) و منها هدية الناسک الى طريق المناسک رسالۂ ایست مضبوط منقّح کہ زبدۂ مناسکِ حج و آدابِ زیارت بجهت سالکان این راه و قاصدان این درگاه ذکر کرده شده - نزدیک بدو هزار بیت *

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(۲۹) و منها رسالة نورية سلطانية در بیان قواعد سلطنت و احکام و ارکان و اسباب و آلاتِ تحصیل آن و اوضاع و آداب این امر عظیم الشان مزیّن باسم سامي سلطان الوقت و ملک الزمان خلّد الله في مراضيه ملکه و سلطانه و اعلى امره و شانه - نزدیک بهزار بیت *

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(۳۰) و منها آداب الصالحين منتخب از ربع العادات از کتاب احیاء علوم لدین در بیان آداب اکل و شرب و منام و معاشرت و مصاحبت باصناف انام از ازواج و اولاد و اصحاب و خدّام - مقدار سه هزار و پانصد بیت *

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(۳۱) و منها مرجع البحرين في الجمع بين الطريقين در جمع میان شریعت و حقیقت و ذکر بعضي از اوضاع و افعال مشایخ صوفیه قدّس الله اسرارهم او مواخذۂ فقها بر ایشان و جواب و توجیه از آن - رسالۂ ایست مفید و نافع در تحصیل اعتقاد صحیح و حق صریح - خالي از خوش عبارتی و حسن بیان نیست - مقدار هزار و پانصد بیت *

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(۳۲) و منها تکمیل الایمان و تقویة الایقان در بیان عقاید اهل سنت و جماعت بایراد عبارت عربيِ عقاید و شرح آن بزبان فارسي با ذکر فوائد شریفه و نکات لطیفه و بسط کلام در بعضي مسائل خصوصاً مسئله خلافت - قریب سه هزار بیت *

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(۳۳) و منها تحصيل التعرّف في معرفة الفقه و التصوف زهاء ثلثة آلاف بيت *.

(۳۴) و منها توصيل المريد الى المراد ببيان احكام الاحزاب و الاوراد در بيان علوم و قواعد متعلقه باوراد وادعيه و احزاب و توفيق ميان مذهب محدّثين و مشايخ كه در تصحيح و تضعيف بعضى اعمال درين باب اختلاف دارند - مشتمل بر سي وصل - و اين رساله توطيه و تمهيد رسالهٔ ديگر است كه در وى اوراد و احزاب كه باجازت مشايخ پيوسته و بعمل كاتب حروف در آمده جمع كرده شده - و مجموع رسالتين مسمّى است باين اسم - مقدار سه هزار بيت *

(۳۵) و منها تسلية المصاب لنيل الاجر و الثواب در بيان صبر بر مصائب و بلايا و تنبيه بر وجود نِعَم خفايا و تحقيق معني اجابت و منع در دعا و سلوكِ طريق رضا و تسليم در ورود احكام ارادية قهرية وهّاب كريم و تأدّب آلهي بترك طلب و سوال باختلاف اوقات و احوال - مقدار هزار بيت و كسرى *

(۳۶) و منها شرح الصدور بتفسير آية النور هزار بيت و كسرى *

(۳۷) و منها الدرّ الفريد في بيان قواعد التجويد رسالة مختصرة مضبوطة مع شرحه بهذا النمط ممزوجا بالمتن - نحوا من الف و خمس مائة بيت *

(۳۸) و منها البناء المرفوع في ترصيص مباحث الموضوع فيه مباحث شريفة منقولة من شرح الشمسية و شرح المطالع و حواشيهما مع ايراد بعض النكات - سنح به الفكر الفاتر في بيان كوامنها و غواشيهما - نحوا من الف بيت و كسر *

(۳۹) و منها الدرّة البهية في اختصار الرسالة الشمسية وقع في مجلس واحد يسير شاملة بجميع ما فيها من مسائل المنطق اختصارا لطيفاً عجيباً في صفحة واحدة و اسطرة معدودة *

(۴۰) و منها شرح الشمسية قد وقع علي طريق البسط و التحقيق الى قوله يجب تقديم مباحث الموصل الى التصور على مباحث الموصل الى التصديق - نحوا من الفي بيت و كسر *

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(۴۱) ومنها حاشية الفوائد الضيائية لاتباع الهوي الصبائية من الاول الى وجه حصر الكلمة في الاقسام و من بحث الفعل الى آخر الكتاب بعون الملک العلّام - التزمت فيه الذب عن المخدوم المكين الامين في اعتراضات مولانا و استاذنا مولانا عصام الدين و ان كان وقع فيها شی من التكلف في الكلام على ما يقتضيه شريطة الالتزام - نحوا من ثمانية آلاف بيت *

(۴۲) و منها الافكار الصافية في ترجمة كتاب الكافية در سن صغر در ابتدای حال طالب علمی بتقريب كسی كه نسبت معنوی و رابطهٔ قوي داشت تا آخر منصوبات تسويد نموده شد و تا بحث مرفوعات به بياض رسيد - و عمر كاتب حروف در آن وقت پانزده يا شانزده سال بود مشتمل بر سخنان بسيار - مقدار هشت هزار بيت و كسری *

(۴۳) و منها نظم آداب المطالعة و المناظرة لمن طالع الكتاب و ناظره رسالهٔ منظومهٔ مثنوی است در آداب بحث و مطالعه - خالي از بسطی و سلاستي نيست - در ايام تحصيل نوشته شده - هفتصد بيت و كسری *

(۴۴) و منها نكات العشق و المحبة في تطئيب قلوب الاحبة در نكات و حكايات محبت و عشقبازي مجازي كه در زمان كودكی و بازي واقع شده بود - نزديک بدو هزار بيت و پانصد *

(۴۵) و منها نكات الحق الحقيقة من باب معارف الطريقة مقدار سه هزار بيت *

(۴۶) و منها صحيفة المودّة مثنوي كه در مراسلت و مكاتبت به برادر عزيز و ياران و دوستان و احباب و اصحاب و ارباب تمئيز نوشته شده بود - شهرآشوب عالم محبت است - خالي از سلاستي و ملاستي نيست - و كسی كه مطلع باشد بر احوال جماعهٔ مكتوب عليهم داند كه در ضمن بيان معاني آن چه نكتها و ظرافتها رعايت كرده شده است - چند صد بيت *

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(۴۷) و منها انتخاب المثنوي للمولوي المعنوي دو هزار و سيصد بيت - و پيش از شروع در آن بيتی چند نوشته شده که از رشحات خامهٔ کاتب حروف است - و صفحهٔ چند از نثر نيز نگاشته آمد *

(۴۸) و منها حسن الاشعار في جمع الاشعار چند غزل و قصايد و قطعها و رباعيات که بجهت شرم و حيا ستر و اخفاء آن لازم است نا مرتّب در بياضها افتاده بود - و بنسبت بيحيائي که لازمهٔ طريقهٔ شاعری است نوشته شده - و در ديباچهٔ رساله جزوی از نثر در عذر کم گوئي شعر که متضمّن معني قباحت فهمي است ذکر کرده شده است *

B. Letters and Pamphlets.

و منها ارسال المکاتيب و الرسائل الی ارباب الکمال و الفضائل - و عدد رسائل قريب بهفتاد رسيده - و من الله المزيد - مقدار هشت هزار بيت :—

۱ — الرسالة الاولي سلوک طريقة الفلاح عند فقد التربية بالاصلاح *

۲ — الرسالة الثانية ذکر اصول الطريقة لکشف الحقيقة *

۳ — الرسالة الثالثة تعئين الطريق لاهل الارادة بالتزام وظائف الخير و العبادة *

۴ — الرسالة الرابعة تنبيه اهل العلوم و النُهی بتفاوت حال الابتداء و الانتهاء *

۵ — الرسالة الخامسة تحصيل الکمال الابدي باختيار الفقر المحمدي *

۶ — الرسالة السادسة قرع الاسماع باختلاف اقوال المشائخ و احوالهم في السماع *

۷ — الرسالة السابعة ورود الامداد بالاستقامة علي الاوراد *

۸ — الرسالة الثامنة رعاية الانصاف و الاعتدال في اعتقاد الصوفية من ارباب الاحوال *

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٩ — الرسالة التاسعة ايراد العبارات الفصيحة في شرح قول النبي عليه السلام الدين النصيحة *

١٠ — الرسالة العاشرة اقامة المراسم فى احوال المواسم *

١١ — الرسالة الحادية عشر تطريب الالحان بمناصحة الخلّان *

١٢ — الرسالة الثانية عشر اختيار الانفراد و التخلّي لانتظار الكشف و التجلّي *

١٣ — الرسالة الثالثة عشر تحصيل المطلوب بانتظار حضور المحبوب *

١٤ — الرسالة الرابعة عشر تذكير اولى الاحلام بان لذات الدنيا كلها آلام *

١٥ — الرسالة الخامسة عشر رفع صوت النحيب بالمام ضعف المشيب *

١٦ — الرسالة السادسة عشر تقسيم الانام على اربعة اقسام *

١٧ — الرسالة السابعة عشر تنبيه الغافلين بفناء الدنيا و اربابها و اغترار الجاهلين بزخارفها واسبابها *

١٨ — الرسالة الثامنة عشر سلوك اقرب السبل بالتوجه الى سيد الرسل *

١٩ — الرسالة التاسعة عشر صدق التعطش و الاوام فى طلب المقصد والمرام *

٢٠ — الرسالة العشرون تثبيت القدم في الاصطبار بترك صحبة الاضداد و الاغيار *

٢١ — الرسالة الحادية و العشرون تجديد الذكر في بيان حقيقة الشكر *

٢٢ — الرسالة الثانية و العشرون اتحاف الاحبة ببيان حديث المحبة *

٢٣ — الرسالة الثالثة و العشرون حفظ الوقت بترك الاختلاط مع الاضداد و الاخلاط *

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٢٤ — الرسالة الرابعة و العشرون التزام التمسک و اللجا بالوقوف بين الخوف و الرجا *

٢٥ — الرسالة الخامسة و العشرون کشف استار الظلم من وجه لسان الحال و القلم *

٢٦ — الرسالة السادسة و العشرون سلوک الطريق الفجاج بالاجتناب عن الانحراف و الاعوجاج *

٢٧ — الرسالة السابعة و العشرون کشف الاستار عن تحقيق معني الکسب و الاختيار *

٢٨ — الرسالة الثامنة و العشرون ترک الاختيار و التدبير بالاکتفاء بتدبير العليم الخبير *

٢٩ — الرسالة التاسعة و العشرون تحقيق الياس عن قول ايمان الباس *

٣٠ — الرسالة الثلثون وجود الفناء في احدية الذات بالغيبة من جميع النسب و الجهات *

٣١ — الرسالة الحادية و الثلثون هداية طريق التربية و التعليم ببيان حقيقة الرضاء و التسليم *

٣٢ — الرسالة الثانية و الثلثون التعظيم لامر الله و الشفقة علي خلق الله *

٣٣ — الرسالة الثالث و الثلثون مشاهدة الابرار بين التجلّى و الاستتار *

٣٤ — الرسالة الرابعة و الثلثون هداية الانام الى التمسک بالشرائع و الاحکام *

٣٥ — الرسالة الخامسة و الثلثون تنبيه اولىٔ الالباب علي ملازمة الادعية و الاحزاب *

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٣٦ — الرسالة السادسة و الثلثون استيناس انوار القبس في شرح دعاء انس*

٣٧ — الرسالة السابعة و الثلثون تجلية القلوب لقدس الملكوت بشرح دعاء القنوت *

٣٨ — الرسالة الثانية و الثلثون تحصيل البركات و الطيّبات ببيان معني التحيّات *

٣٩ — الرسالة التاسعة و الثلثون تثبيت الفواد بتصور عظمة ربّ العباد *

٤٠ — الرسالة الاربعون ذم الكسل فى المواظبة و المداومة على العمل *

٤١ — الرسالة الحادية و الاربعون تنوير القمر ليلة البدر فى تصوير معنى شرح الصدر *

٤٢ — الرسالة الثانية و الاربعون تدقيق البيان فى ايجاب الشكر المزيد و استلزامه لحصول المحبّة و التوحيد *

٤٣ — الرسالة الثالثة و الاربعون تحقيق الدعاء و الاستمداد بلسان القال و الحال و الاستعداد *

٤٤ — الرسالة الرابعة و الاربعون طى لسان القلم ببيان معنى قولهم لا راحة الا فى القدم والعدم *

٤٥ — الرسالة الخامسة و الاربعون اظهار الحسرة و الاستبعاد بتقصير النفس فى اصلاح المبدأ و المعاد *

٤٦ — الرسالة السادسة و الاربعون حرقة الجنان بتمنى الكشف و العيان *

٤٧ — الرسالة السابعة و الاربعون طيب المذاق ببيان الذوق فى مقام الاطلاق *

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٤٨ — الرسالة الثامنة و الاربعون حراسة الايمان من مكائد الشيطان *

٤٩ — الرسالة التاسعة و الاربعون توصية الاصحاب بالصبر فى جميع الابواب *

٥٠ — الرسالة الخمسون تنبيه اهل الفكر على رعاية آداب الذكر *

٥١ — الرسالة الحادية والخمسون تذكرة اهل الذكر ببيان فضيلة الذكر على الفكر *

٥٢ — الرسالة الثانية و الخمسون الاعتصام بحبل الصبر و الثبات عند اجتماع اسباب اللذات و الشهوات *

٥٣ — الرسالة الثالثة و الخمسون تسوية الادانى و الاعالى بالخوف و السكوت فى حضرة لا ابالى *

٥٤ — الرسالة الرابعة و الخمسون تبصير الاغبياء بان الفقر مرأة جمال الاغنياء *

٥٥ — الرسالة الخامسة و الخمسون اسقاط اعتبار الاجساد و الاشباح عند ملاقاة القلوب و الارواح *

٥٦ — الرسالة السادسة و الخمسون تحصيل الغنائم و البركات بتفسير سورة و العاديات *

٥٧ — الرسالة السابعة و الخمسون ترجمة مكتوب النبى الاجلّ فى تعزية ولد معاذ بن جبل *

٥٨ — الرسالة الثامنة و الخمسون ايراد العبارات بلسان اهل الاشارات *

٥٩ — الرسالة التاسعة و الخمسون طلاقة اللسان بشكاية الفراق الهجران *

٦٠ — الرسالة الستون اظهار القلق و الاضطراب المطلوب بلا ارتياب *

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٦١ — الرسالة الحادية و الستون توصية الاخوان بالصبر على جفاء اهل الزمان *

٦٢ — الرسالة الثانية و الستون طلب الغور فى ذكر باعث سفر لاهور *

٦٣ — الرسالة الثالثة و الستون سلوك الطريقة على نهج المجاز قنطرة الحقيقة *

٦٤ — الرسالة الرابعة و الستون تسلية السائل ببيان المسائل *

٦٥ — الرسالة الخامسة و الستون وجدان البرد باستشمام الورد *

٦٦ — الرسالة السادسة و الستون جمع كلمات العارفين من اهل الصدق و اليقين *

٦٧ — الرسالة السابعة و الستون الرد علي الدعاوى الباطلة التي صدرت لبعض النفوس العاطلة *

SUMMARY.

عدد اين كتب و رسائل كه بر صفحهٔ بيان نگاشته آمد از سي متجاوز ست - و شمار اين رسائل از شصت بالا - اگر اينها را جدا جدا بشمارند و رسم دكان داري در ميان آرند دانى كه عدد آن بچند رسد - و هنوز سلسلهٔ سخن دراز ست و در فيض آلهي باز - تا كجا رسد و بكجا رساند - اگرچه درين ايام قوت طبيعت بشرى در زبول است و علوم و فهوم روى بذهول دارد - و شوق پراوز بعالم ديگر غالب - و اجابت داعى حق را منتظر است - و الله عالم تا آخر كار چيست - و اگر عدد ابيات بر روش كاتبان بشمارند ميتوان گفت كه از چهار صد هزار بيت بيشتر است و از پانصد هزار كمتر - و اگر حساب را تمام از پردهٔ اجمال و ابهام بر آرند چهار صد و شصت هزار بشمارند - و چون اطوار سخن متنوّع و انواع علوم متعدد بود مجموع بسه قسم انقسام يافت - و هر قسمى در حكم دفتري و جلدى ارتسام پزيرفت - و اگر اين همه را يک صحيفه سازند و در يک جلد شيرازه به بندند بيشک در نظر عرف و عادت از دائرهٔ مناسبت و ملائمت بدر افتد - و برداشتن بار آن بر دست طبيعت گران آيد - و چون اطوار سخن متنوّع

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و انواع علم متعدد بود ترتیبی و تمیزی مي بایست اعتبار کرد - ازین جهت تالیف و ترتیب در سه دفتر نهاده شد - کتب و رسائل عربي در هر فن و هر باب که باشد جدا جمع کرده شد - و آنچه بزبان فارسي بود دو قسم شد - و تحقیق این تقسیم و تفصیل این اجمال در خطبهٔ دفتر عربي مبیّن شده است - و مجموع اسامي کتب و رسائل از خرد و بزرگ که در آن دفتر مکتوب ست چهل و هشت - چنانکه در دوائر که بر پشت دفتر کشیده شده ارتسام یافته است - و عدد آنچه درین قسم ثاني مکتوب است سیزده - و آنچه در دفتر ثالث ارتسام یافته چهارده - مجموع شصت و پنج عدد - و رسائل که اجزاء کتابِ ارسال المکاتیب و الرسائل الی ارباب الکمال و الفضائل شصت و هفت - و اگر آنها را جدا جدا شمارند صد و سي و دو گردد - و عددِ ابیات معلوم شد که قریب به پانصد هزار واصل است - اگر چیزی ازآن بمرتبهٔ قبول وصول یافت اَلْحَمْدُ لِلّٰه - وگرنه همه هیچ - مقصود رضای حق وعطای اوست - اَنّي لا اضیع عملَ عاملٍ منکم بشارتی مي بخشد - و اَلَا لِلّٰه الدینُ الخالصُ کمر می شکند - و الایمانُ بین الخوفِ و الرجاءِ - و ما عندکم ینفدُ وما عنْدَ الله باقٍ - و العاقبةُ بالخیرِ اِنْ شَاءَ اللّٰهُ الخلّاق *

—o—

وقع الفراغ علی یدالحقیر ابو الخیر ناصر الدین محمد بن نظام الدین احمد بن محمد عبد الله بن نظام الدین احمد سنه ۱۱۵۰ من هجرة خیر الانام علیه افضل التحیة و اکمل السلام یوم اثنین التسعة و العشرون من شهر محرم الحرام *

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Atharva Veda.[1] Kāṇda XVI.

By BRAJA LAL MUKHERJEE, M.A.

Yo 3 psva 1 gniḥ (1. 7) is the deity of this Kāṇda, called both in Vaidik and Avestan literature Apāṃnapāt.

Yo anidhmo dīdayadapsvaṃtar yaṃ viprāsa īrate adhvareṣu apām napānmadhumatīrapo dā yābhirindro vāvṛdhe vīryāya (R.V.X. 30. 4; A.V. 14. 1, 37.)

Apāṃ napāt is the god Agni who shines inside the waters without fuel. Yo-nidhmo dīdayad dīpyase-bhyantara mapsu (Nirukta 10. 19.). Apāṃ napāt is, therefore, the glow in the waters, and according to Yāska is the same as Tanūnapāt (Nirukta 10. 18; 8. 5.).

Atisṛṣṭo apāṃ vṛṣabhotisṛṣṭā agnayo divyāḥ (1. 1.) Thus begins the Kāṇda. Apāṃ vṛṣabhaḥ is Agni, the shedder or water. Agnayo divyāḥ or the various forms of apāṃnapāt are rujan, parirujan, mṛṇan, parimṛṇan, mrokaḥ, manohā, khanaḥ, nirdāhaḥ ātmadūṣiḥ and tanūdūṣiḥ (1. 2). Rujan, Mṛṇan, Pramṛṇan (or parimṛṇan)—appear both in the Atharva Veda and also in the Rig Veda. The other words do not appear in the Rig Veda, but they appear in the Atharva Veda and also in works belonging to the Sāma Veda. The Mantra Brāhmaṇa has Marukaḥ and Khalaḥ for Mrokaḥ and Khanaḥ. In 1. 4. 'idaṃ' is an adverb and 'tam' refers to Agni which takes the names or forms mentioned in 1. 3.

Tena tamabhyatisṛjāmo yosmāndveṣṭi yaṃ vayaṃ dviṣmaḥ. (1. 5).

Here 'tena' refers to the same Agni. Taṃ refers to the subsequent clause. Abhyatisṛjāmaḥ has an intensive idea. 'Abhi' and 'ati' (abhyati) must be taken together, as the text shews. It means nāśayāmaḥ. This solution makes sense. On a similar passage (A.V. 10. 5, 15) Whitney notes that ati-sṛj is used intransitively, and 'him' (tam) is governed by 'abhi.' As to 'tena' he notes that the accent-sign has slipped out of place. I feel diffident in accepting Whitney's assumption that ati-sṛj has been used intransitively. No grounds have been made out justifying the assumption. On the other hand, the meaning I have given to this sentence is plain and sensible.

Apāmagramasisamudraṃ vo-bhyavasṛjāmi (1. 6.), agraṃ is the resort. Apāmagraṃ is the resort of the fires. This is addressed to the same apāṃnapāt. In order to understand this

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[1] Continuation of a previous paper on Kāṇda XV published in the Society's Journal and Proceedings, Vol. XXI, 1925, No. 1.

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sentence fully, reference must be made to R.V. 7. 49, 4. Yāsu rājā varuṇo yāsu somo viśve devā yāsūrjaṃ madaṃti vaiśvānaro yāsvagniḥ praviṣṭastā āpo devīriha māmavaṃtu. Reference must also be made to A.V. 10. 5 23; Samudraṃ vaḥ pra hiṇomi svāṃ yonimapītana ariṣṭāḥ sarvahāyaso mā cha naḥ kiṁ chanāmamat. It is clear therefore, that apānnapāt is here addressed to go to his own lair (the ocean) so that he may not injure the speaker.

Yo 3 psva 1 gnirati taṃ sṛjāmi mrokaṃ khaniṃ tanūdūṣiṃ (1. 7).

This is in conformity with and is probably an imitation of ye apsvaṃtaragnayaḥ praviṣṭā gohya upagohyo marūko manohāḥ khalo virujastanūdūṣirindriyahā ati tānt sṛjāmi (M.B. 1. 7. 1).

Khādira says ye apsviti apāmañjalimavasiṁchet (3. 1. 13) See also Gobhila 3. 4. 14. The text under discussion has a similar viniyoga.

Yo va āpo-gnirāviveśa sa eṣa yadvo ghoraṃ tadetat (1. 8.)

Compare: yad apāṃ ghoraṃ yad-apāṃ kruraṃ yad apāṃ aśāntamati tat sṛjāmi (M.B. 1. 7. 2.) The viniyoga is the same (Kh 3. 1. 15; Gobhila 2. 4. 15.).

The apsvagniḥ is described in the following: Yo a 3 psvantaragniryo vṛtre yaḥ puruṣe yo aśmani ya āviveśauṣadhīryo vanaspatīstebhyo agnibhyo hutamastvetat (M.S. 2. 3. 13; K.S. 40, 3) A similar description is given in K.S. 40. 5.

Indrasya va indriyeṇābhiṣiṁchet (1 9.) Indriyaṃ means dhanaṃ (Ngh 2. 10) Indrasya indriyaṃ means water. Water is the wealth of Indra. Whitney translates it as Indra's indrapower. There is hardly any authority for this translation; and it is meaningless. The word indriyeṇa occurs in R.V. 1. 165, 8 vadhīṃ vṛtraṃ maruta iṃdriyeṇa svena bhāmena taviṣo babhūvān ahametā manave viśvaśchaṃdrāḥ sugā apaśchakara vajrabāhuḥ | Sāyaṇa does not explain 'indriyeṇa' M.M (S.B.E. 32. 198) says; "When Indra says that he slew Vṛtra 'indriyeṇa' he evidently chooses that word with a purpose and we must therefore translate it here, not only by 'might,' but by 'Indra's peculiar might.' Indriya as derived from indra, means originally indra-hood, then power in general; just as veretraghna in Zend means victory in general, though originally it meant the slaying of Vṛtra." We note that it is merely an assumption that indriya means Indra's peculiar might. M.M. has not adduced evidence in support of his assumption. Ludwig has made a similar assumption | Indrakraft | (II. 619). The meaning given to the word in the Nighaṇṭu (II 10. 14) has been neglected without rhyme or reason. We have the evidence of Pāṇini (5. 2. 93) that one of the meanings of the word indriyam is indralingam.

Ariprā āpo apa ripramasmat | 10 | prāsmadeno vahantu pra duṣvapnyaṃ vahantu | 11 | śivena mā chakṣuṣā paśyatāpaḥ śivayā tanvopa spṛśata tvachaṃ me | 12 | śivānagnīnapsuṣado havāmahe

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mayi kṣatraṃ varcha ā dhatta devīḥ | 13 | This passage has also a parallel: Yo rochanas tamihagṛhṇāmi tenāhaṃ māṃ abhiṣiñchāmi yaśase tejase brahmavarchasāyavalāyendriyāya vīryyāyānnādyāya rāyaspoṣāya tviṣyā apacityai (M.B. 1. 7. 3-4).

Whitney has a note on verses 4 and 5 idaṃ tamatisṛjāmi taṃ mābhyavanikṣi | 4 | tena tamabhyatisṛjāmo yo-smāndveṣṭi yaṃ vayaṃ dviṣmaḥ | 5 |.

He says that these two verses form a part of verses 15-21 of Atharva Veda Kāṇda 10 ch. 5. I fail to appreciate the propriety of the remark. The only fact that we note is, that some words are common to both. There is nothing peculiar in either of the two sentences to call for a comparison. The sentences are vulgar expressions which might be used in any connection. The passage tam vadheyaṃ taṃ stṛṣīyānena brahmaṇānena karmaṇānayā menyā (X. 5. 15) supports my view of the meaning of 1. 5. and also the propriety of 'tena.'

There has been some difference of opinion regarding the meaning of the word mroka. Whitney translates it as 'dimming.' Weber (Ind. St. 13. 185) thinks that this Kāṇda is an evening prayer. He draws this inference from the word mroka. There is no word in the whole Kāṇda which suggests that it is an evening prayer. It is a plain kavacha which may be used at any time of the day or night.

The works of Gobhila and Khādira show that the mantras of the M.B. quoted above were used in actual baths by snātakas. The same practice obtains even at the present day as a part of the upanayana ceremony. The bath is an actual bath. In the abhichāra ceremony in the text under discussion the bath is substituted by a sprinkling of water by means of a prastara, which is mentioned in the next section.

Section 2.

nirdurarmaṇya ūrjā madhumatī vāk (1)

Whitney's reading of the text is correct; but his translation proceeds on a reading suggested by the St. Petersburg Lexicon. There can be no doubt as to the reading of the text as it is referred to in the Prātiśākhya. The words nirdurarmaṇya ūrjā admit of a very simple analysis, nir + dur + armaṇyaḥ. Then armaṇyaḥ = arman + ṣṇya; √*r* + man = arman, to kill.

The word nirdurarmaṇya means 'something which can hardly be killed' or 'which can be killed only with great difficulty'. There is here, therefore, a prayer that strength may not fail. We take both of the words nirdurarmaṇya and ūrjā as masculine nominative singular. The change into duradmanya is not necessary, and is probably improper. The word occurs in duradmanyai pāhi (T.S. 1. 1 13) and Sāyaṇa explains it as follows:—duradmanyai yāgādhikāravirodhiduṣṭahetubho-

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janāt pāhi. What will nirduradmanyaūrjā mean? Whitney's translation is 'Out of evil eating with refreshment.' Where does 'out of' come from? Is duradmanya 'an ablative'? Then he adds 'comes' which makes the whole sentence senseless. Keith translates duradmanyai pāhi as 'guard me from evil food.' It is clear, therefore, that duradmanya cannot be substituted for durarmaṇya; and nirduradmanya ūrjā cannot be connected with 'madhumatī vāk.' The Āp. Śr. 6. 20 has idamahaṃ duradmanyāṃ niṣplāvayāmi. Duradmanī would therefore mean 'that which is uneatable' or 'liquid which is undrinkable.' It may mean poison (K.S. 1. 12.)

Suśrutau karṇau bhadraśrutau karṇau bhadraṃ ślokaṃ śrūyāsaṃ | 4 | suśrutiścha mopaśrutiścha ma hāsiṣṭāṃ sauparṇaṃ chakṣurajasraṃ jyotiḥ | 5 | .

A similar passage occurs in Āp. Śr S. 6. 20. 2. ajasraṃ daivyaṃ jyotiḥ sauparṇam chakṣuḥ suśrutau karṇau devaśrutau karṇau keśā barhiḥ śikhā prastaraḥ. See also suśravaḥ suśravasaṃ mā kuru yathātvaṃ suśravaḥ suśravā deveṣvevamahaṃ suśravaḥ suśravā brāhmaṇeṣu bhūyāsaṃ (M.B. 1. 6. 31) ṛṣīṇāṃ prastarosi namo-stu daivāya prastarāya | 6. |

The prastara is introduced because it is used to sprinkle water. Where the bath is not actually performed, water is sprinkled (even at the present day) by means of a prastara. The efficacy of the prastara is emphasised by the words ṛṣīṇāṃ prastarosi. This is an encomium. The author had great faith in the mysterious efficacy of things which had belonged to the Ṛṣis, and of the practices of the Ṛṣis; that is to say, very ancient practices.

Section 3.

This section continues the prayer for protection from harm and for attainment of prosperity. Whitney notes that many of the words in this section are obscure in meaning. In mūrdhāhaṃ rayīṇāṃ, mūrdhā samānānām bhūyāsaṃ, rayīṇāṃ means udakānāṃ (Nighaṇṭu 1. 12). He has been sprinkling water; hence the propriety of rayīṇāṃ. This has the same meaning as apāmagraṃ (1. 6); samānānāṃ would mean, things similar to water; mūrdhaiva samānānāṃ bhavati (K.S. 20. 11) uttamaḥ samānānāṃ bhavati (K.S. 21. 4.). We may explain rujaścha and venaścha as waters which cause illness and the healing water. The next word to consider is 'vidharmā.' Derivatives of this word appear in the Rig Veda, which may be consulted to advantage. In R.V.X. 124, 8, vidharman (vidharmaṇi) has been taken to mean antarikṣe. Ludwig has 'am Himmel.' Mūrdhā and vidharmā mean the svaḥ and the antarikṣaṃ respectively. Next is the word 'urvaḥ' which is the same as urvyaḥ. Urvī and urvaḥ are alternative forms. The St. Petersberg Dictionary wants to change urva into ukha, although there is not the least justification for it. The next word is chamasaḥ.

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According to the Nighaṇṭu (1. 10) it means 'clouds' 'Urvaścha mā chamasaścha' therefore may mean 'rivers' or 'oceans' and 'clouds' (Nirukta 2. 26). Dhartā means nourisher and Dharuṇah means supporter (Nighaṇṭu 1. 12.) The word in the Nighaṇṭu is neuter, and means 'water.' The word dharuṇaḥ has been used in the Rig Veda to mean dhārayitā. I think therefore, dhartā means the cloud or the sky and dharuṇaḥ means 'water.'

Then we come to the word vimokaḥ grammatically meaning releaser. The true import of the word may be 'that which releases.' Then ārdrapaviḥ will mean apāṃ vajraṃ (A.V.X. 5. 50) the water-thunderbolt. Then ārdradānuḥ will mean 'the watery cloud.' See samudro-si nabhasvānārdradānuśśaṃbhurmayobhūrabhi mā vāhi svaha (K.S. 18. 14). Whitney's wet drops do not carry any sense. Mātariśvā cha mā hāsiṣṭāṃ | 4 | bṛhaspatirma ātmā nṛmaṇā nāma hṛdyaḥ | 5 | I believe there is a particular reason why mātariśvā and bṛhaspati have been brought into connection. Compare tamṛtviyā upa vāchaḥ sachaṃte sargo na yo devayatāmasarji | vṛhaspatiḥ sa hyaṃjo varāṃasi vibhvābhavatsamṛte mātariśvā (R.V.1. 190, 2) Brhaspasti's name comes in as he was the priest and a form of Agni, who is in one form the deity of this Kāṇḍa and is the god of mantras and saves the devotee from curses and malignity.

(4)

This Section offers no difficulties.

(5)

The author then asks for protection from evil dreams. Evil dreams come in sleep. The author describes its nature. Vidma te svapna janitraṃ grāhyāḥ putro-si yamasya karaṇaḥ.

Grāhyāḥ putraḥ. Sleep is the child of grāhī, abstraction of all functions and processes. Whitney and Bloomfield translate the word by 'seizure.' This yields no sense. Ludwig (Der Rig Veda III 468) has translated the passage, but has not translated the word grāhī. In A.V. III. 11 we come across grāhirjagrāha. It is not reasonable to assume without any particular reason, that grāhī and grāhi bear the same meaning. The Paippalāda reads grāhyā gṛhīto. The Rig Veda X. 161, 1, has grāhirjagrāha which Sāyaṇa explains as grahaṇaśīlā graharūpā devatā. But who is this devatā ? I believe that it is the abstraction of all functions either bodily or mental, and must be explained with reference to the context. Sleep is equivalent to abstraction, absorption or abeyance, or abatement of mental functions or processes. To say sleep is the son of 'seizure' expresses no sense. In sleep mental processes apparently disappear, or abate or are in abeyance. This phrase is still in use

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in Sanscritic vernaculars ; for instance, roge dhoreche, caught by disease ; ghum dhoreche, caught by sleep. Sleep is yamasya karaṇaḥ. Karaṇaḥ is ādyudāttaḥ. Therefore, it means karma (action) Yamo yachhatīti. (Nir 10, 19) Yachhati uparamayati (Durgā) Sleep is caused as a rule. Sleep ends everything. Sleep is death or extreme abeyance of processes. Sleep is the son of Nirṛitiḥ. Nirṛtiḥ is enjoyment. Nirṛtirniramaṇādṛchhateḥ kṛchhrāpattiritarā sā pṛthivyā sandihyate tayorvibhāgaḥ | Sleep is pleasant. It is tired nature's restorer. It is the son of abhūti, nirbhūti, parābhūti. These are grades of absence of feeling, or sensation, or operation of the senses or oblivion. These words cannot mean ill success, or 'extermination' or 'calamity.' There is no sense of ill-success or extermination or calamity in sleep. Sleep is said to be devaǰāmīnām putraḥ, son of the sisters of the gods. Therefore sleep partakes of the characteristics both of the gods and the not-gods. This follows from Nirukta 3, 6. If the devaǰāmayaḥ are both gods and not-gods, then they must be both pleasant and unpleasant. Therefore sleep (their son) has the qualities of pleasantness and also of unpleasantness. There is no doubt that the persons who composed verses about dreams were afraid of bad dreams which they believed foreboded impending evil. There is no ground however for assuming that they were afraid of sleep by itself. Sleep is pleasant, of course; but it may be dreaded as it gives an opportunity for bad dreams.

(6)

This section is also in respect of evil dreams. Ajaiṣmādyāsanāmādyā bhūmānāgaso vayaṃ | uṣo yasmādduṣvapnyāda bhaiṣmāpa taduchhatu. This is the same as R.V. 8. 47, 18 but without the last portion of it namely, anehaso va ūtayaḥ su ūtayo va ūtayaḥ. The mantra is attributed to Trita Āptya. The deity of R.V. 8. 47 is Uṣā who is also spoken of in the present section. A similar passage occurs in R.V.X. 164, 5 composed by Prachetā which is as follows:—ajaiṣmādyāsanāma chābhūmānāgaso vayaṃ jāgrat svapnaḥ saṃkalpaḥ pāpo-yaṃ dviṣmastaṃ saṛchhatu yo no dveṣṭi tamṛchhtu. Both Trita Āptya and Āngirasāḥ Prachetāḥ must have believed that dreams seen at dawn come out to be true. This belief has continued from before their times up to the present day. There is a prayer for averting evil dreams, a prayer for averting the consequences, and also a prayer that evil dreams may not come. They divide evil dreams into two classes (1) those seen in sleep and (2) those seen in a waking state. The author of this Kāṇda admits that we may dream even when awake. The goddess who protects us from both kinds of dreams is Uṣā (returning consciousness or light). She is asked to grant protection in concord with Vāk. Vāk here means the prayer recited. Uṣā alone appears every day but she becomes endued with the

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power of averting evil dreams when properly asked by mantras to do so.

Two verses in this section require some explanation 'te 3 muṣmaị parā vahantvarāyān durṇāmnaḥ sadānvāḥ kumbhīkā dūṣīkāḥ ṗīyakān || Ārāyaḥ are the barren or the niggards; Durnāmnaḥ are in substance those spirits (or gods) who cause waters to be injurious or the spirits of injurious water. Sadānvāḥ are the yelling goddesses of famine. (Nirukta 6. 30) Ludwig has not translated the word. Weber has a long note on the word discussing how the word may be analysed. The next word kumbhīkāḥ has not been touched by any scholar. Kumbhīkā or kumbhikā is the kumbha which supports a pillar (Gaṇaratnamahodadhi 3, 184). Therefore the word means the disease which causes swelling about the ankles, known as filariasis. Here the god filariasis has been referred to. Dūṣīkāḥ means the dirty exudation from the eyes. This is supported by the following text: dvādaṣa vai puruṣe-medhyāni loma ṡcha tanūṡchāsṛkcha māṃsaṃ chāsthi cha maj̀jā cha snehaṡcha plīhā chāṡru cha dūṣīkā cha svedaṡcha yacchaprāsravayata etāni vai puruṣe dvādaṡāmedhyāni K.S 34, 12)

(7)

Tenainaṃ vidhyāmi. By 'tena' the author probably refers to the prastara, or the water which is sprinkled. The meaning I have suggested for the words abhūti and the rest are fully supported by the final 'tamasā vidhyāmi.' Tamaḥ is the climax of abhūti. The author says devānāmenaṃ ghoraiḥ krūraiḥ praiṣairabhipreṣyāmi. I kill with the dark and cruel praiṣas of the gods. These praiṣas are mantras uttered in connection with the sacrifice or slaughter of animals in the yagnas. These are said to be dark and cruel.

Vaiṡvānarasyainaṃ daṃṣṭrayorapidadhāmi. The author speaks of two tusks of Vaiṡvānara. We would not be very far wrong in inferring that the author knew a figure of Vaiṡvānara with two tusks. These are also referred to in the following ubhobhayāvinnupa dhehi daṃṣṭrā himsraḥ ṡiṡāno-varaṃ paraṃ cha | utāṃtarikṣe pari yāhi rāj̀aṁjaṃbhaiḥ saṃ dhehyabhiyātudhānān (R.V. 10. 87. 3.)

Evānevāva sā garat is difficult to explain. Whitney's translation of 'eva' by 'so' and 'aneva' by 'not so' is not intelligible. Let us take 'Eva' and 'ava' to mean 'surely': 'aneva' will also mean 'as a matter of certainty' The purport of the sentence is that 'she shall surely swallow.' But who is sā? Compare A.V. 5. 5. 1.

The rest of the chapter does not call for any remark. This Kāṇda is an incantation to injure the enemy and to fasten all evils including evil dreams and diseases on him. Whitney says that the study of the ritual application of the book distinct-

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ly fails to reveal any pervading concinnity of purpose or of use. I cannot however adopt the same opinion. He adds "One is half tempted to give to the book the title "against the terror by night." One who follows my rendering of the text will hardly believe that 'terror by night' has anything to do with the purport of this Kāṇda. This is a prayer to Tanūnapāt or Apāṃnapāt, to exterminate the enemy by various means including therein, by impinging evil dreams (whether waking dreams or sleeping ones)on him. Weber says that parts of this book are to be recited before going to bed in the evening, (Ind. St. 13, 185) but I have vainly sought for any reliable evidence to support Weber's opinion.

The language of this Kāṇda shews this to be a composition of a comparatively late age.

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A Note on a Simulid Larva found associated with a May-Fly Nymph.

By S. RIBEIRO, *Entomological Assistant, Zoological Survey of India.*

(Communicated by Major R. B. Seymour Sewell, I.M.S.)

Among the Ephemeroptera (May-flies) nymphs recently collected by Dr. B. N. Chopra in the Balasan River, nine miles from Kurseong, ca. 1500 feet, E. Himalayas, there is one specimen which has attached to it a Simulid larva. In view of the peculiar conditions of existence of these two insects, I have drawn up this note in the hope that it will be an incentive to further observation on the larval habits of these forms, and in view of the very scanty knowledge that we at present possess, it seems desirable that such associations, accidental or otherwise, should be placed on record.

In the accompanying photograph the Simulid larva is seen firmly fixed by its "sucker" to the dorsal surface, towards the centre of the left wing-case of the may-fly nymph.*

It is apparent from an examination of the literature on the subject that the larvae of the Simulid diptera generally inhabit swift-running streams where they have been found in clusters attached to water-plants, rocks and stones, being particularly abundant where the current moves with great rapidity. They are sedentary in their habits and have been noticed adhering closely to their abodes by means of their "suckers." Some individuals, however, have been known to segregate themselves from the community and to stray away from their haunts. When an individual is disturbed it relinquishes its hold and is carried downstream by the current, supporting itself by means of its "anterior leg" to a silken thread which it commences to spin immediately it quits its hold and by means of which it can later regain its former position. The larva, moreover, protects itself against all mishaps by a network of these threads which it spins on its support. Simulid larvae have been found together with the larvae of Ephemeroptera, Sialidae (Neuroptera), Trichoptera and Blepharoceridae (Diptera). Some Trichoptera, however, are recorded as being carnivorous and feeding on the Simulid larvae.

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* Dr. Chopra is not certain of its identity but is of opinion that "it resembles very closely the nymphs of the genus *Iron* Fam. Heptageniidae)."

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In the case under review it seems that either (1) the silken thread, which normally supports the dipterous larva in the stream on it losing its natural situation, may have come in contact with the body of the Ephemeropteron, in which case the silky secretion would adhere to its body-surface thus furnishing a new anchorage for the Simulid, and on recovering itself from the stream the larva would have no other alternative but to attach itself to the body of the Ephemeropteron, or that (2) as the may-fly nymph was taken from under a stone, the upper surface of which may have been the abode of Simulid larvae, a stray individual in its wanderings might by some chance have got attached to it. In either case the attachment of the Simulid to the Ephemeropteron would appear to be accidental and not a case of true Commensalism.

I am indebted to Major R. B. Seymour Sewell, I.M.S., Director, Zoological Survey of India, for his kind advice and help in the matter, while my thanks are due to Dr. B. N. Chopra for the identification of the may-fly nymph.

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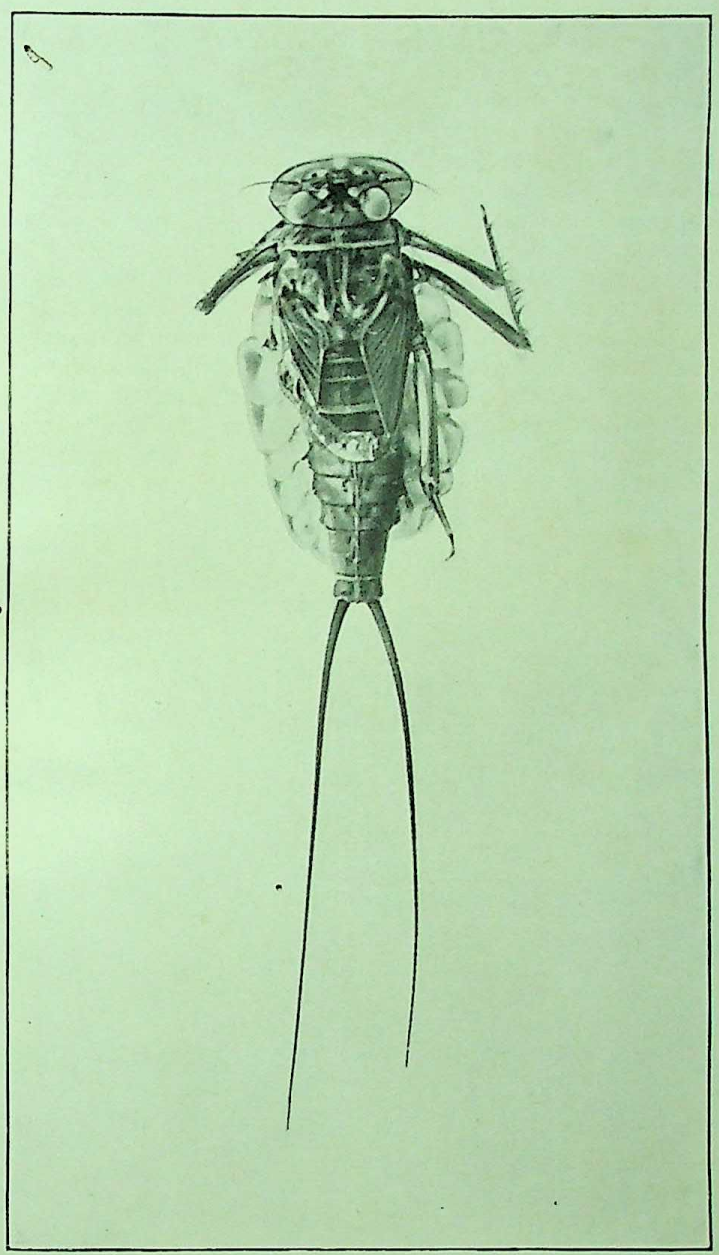

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A Short Note on the Distribution and Habits of the bivalve, Balwantia soleniformis (Benson).

By SUNDER LAL HORA, D.Sc., F., *Officiating Superintendent, Zoological Survey of India.*

(Read at the thirteenth annual meeting of the Indian Science Congress and communicated by permission of the Director, Zoological Survey of India.)

INTRODUCTION.

In 1836, Benson[1] described *Anodonta soleniformis* from a collection purchased by the Asiatic Society of Bengal in 1833 and reported to have come from the "North-east frontier of Bengal." Preston[2] in the *Fauna of British India* gives its habitat as Assam, but mentions the presence of a large number of specimens of this species in the collection of the Indian Museum from Cachar. Nothing appears to have been known about the habits of this species till 1919, when both Godwin Austen[3] and Annandale[4] wrote a short account of its habits, distribution and burrows from notes and material supplied to them by Mr. F. Ede of Silchar. In the same year Baini Prashad[5] recognised this specie, as the type of his new genus *Balwantia*. It was at Dr. B. Prashad's suggestion that I undertook a short tour to the Cachar District in March, 1925, with a view to studying this peculiar bivalve in nature. I was fortunate enough to collect a large series of specimens of *Balwantia* and brought about a dozen examples alive with me to Calcutta. The following notes are based on observations and experiments made in the field.

DISTRIBUTION.

Regarding the exact localities in Cachar in which *B. soleniformis* lives Godwin-Austen quotes the following passage from Mr. Ede's notes, "I found specimens in the Daleswari in Hailakandy between Katlicherra and Cookicherra, also (once only) on some rocks by diving in a very dry season, in the centre of the Barak River opposite the old pukka club in Silchar, but since then have only found them in the Daleswari. I think the specimens I found under the laterite rocks, in the

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1 Benson, *Journ. As. Soc. Bengal* V, pp. 350, 750 (1836).
2 Preston, *Faun. Brit. Ind. Mollusca*, p. 133 (1915).
3 Godwin-Austen, *Rec. Ind. Mus.* XVI, p. 204 (1919).
4 Annandale, *ibid.*, p. 205.
5 Prashad, *ibid.*, p. 290.

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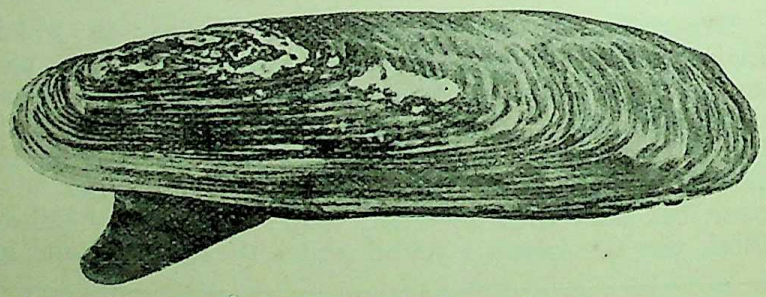
centre of the Barak in Silchar, must have been casual specimens, swept down by some big flood." During my short tour I was only able to visit the places mentioned in the above note. Between Katlicherra and Cookicherra the species is very common and is very well known among the Uriya coolies, who consider it a great delicacy. Other people knew very little about it and very few recognised it as a local species at Katlicherra, even when specimens were shown to them. From extensive enquiries made among the Lushais frequenting the bazaar at Katlicherra, I was able to ascertain that *B. soleniformis* is found for a considerable distance beyond Cookicherra. At no other place in Cachar through which I passed was anything known regarding this bivalve, and it was with great difficulty that I was able to pursuade a fisherman to look for it opposite the site of the old pukka club at Silchar (now known as the site of the rocks of the Kalibari Ghat). Here we were able to find a regular colony of *Balwantia* burrowing in blue clay slightly mixed with sand in shallow water. The laterite rocks referred to by Mr. Ede are conglomerate rocks with rounded pebbles. They are very hard and it is not likely that the bivalve is capable of making burrows in them. It is, however, quite clear that the species is not a casual visitor in the Barak river, but is quite common in places where a suitable bed exists for the burrows of the animal. The hermit-like retiring habit of the species accounts for the ignorance of the people regarding its distribution. From observations made in the field I am confident that when proper search is made, this species will be found widely distributed not only in South Cachar but in several other places in the Surma Valley.

Habits.

Balwantia soleniformis is an elongated species which always lives in burrows excavated either in hard blue clay or in friable



Text-fig. 1.—*Balwantia soleniformis* (Benson).
Note the course ridges on the shell and the muscular foot which is not capable of being fully retracted within the shell.

sandstone. The shell is much narrower at the anterior than at the posterior end ; it is thin and possesses sharp margins especially

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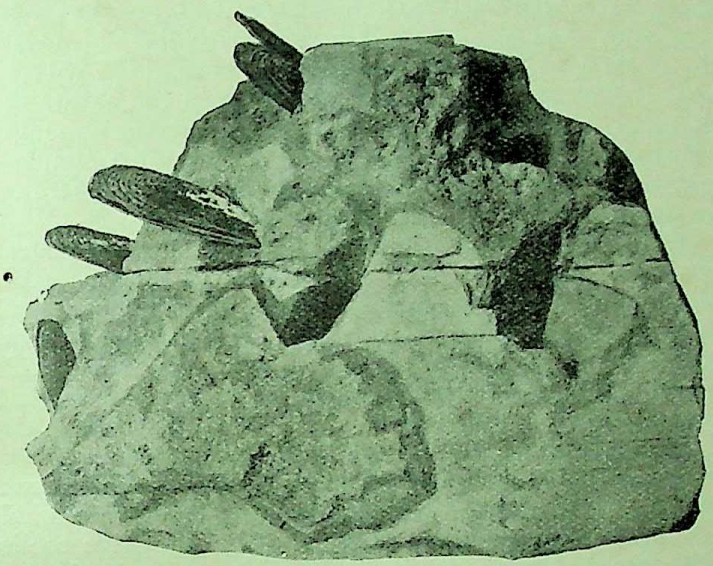
at the anterior end. The surface of the shell is marked with partly horizontal and partly longitudinal coarse ridges. The shell gapes widely open even when the two empty valves of the bivalve are tightly pressed together. This gape is for the protrusion of the foot, which is not capable of being fully retracted inside the valves. According to Mr. Ede, " It is only possible to obtain this bivalve when the rivers are extremely low in the height of the dry or cold season....The specimens found by me seem to prefer fairly rapid running water. Their borings are generally on the outside of curves or bends, where the current is fairly strong. They seem to change about from hole to hole, descending as the river falls." When I visited the



Text-fig. 2.—A piece of sandstone honey-combed with burrows of *Balwantia soleniformis* (Benson).

The shells indicate the position of obscure burrows in this view. In nature animals lie deep down in burrows and rarely come to the surface.

place in March, the water in the Daleswari was fairly high and muddy on account of recent rains and the animals were found all along the shore in suitable places near Katlicherra. The stream was sluggish except in places where on account of rocks there were rapids. The animal burrows on an inclined plane probably to prevent its burrows from being silted up and no alive specimen was picked up from the flat muddy bottom of the river. It is quite possible that during the dry season Mr. Ede's description is applicable to the habitat of *Balwantia*.

The burrow of the animal is of uniform calibre throughout and its cross section exactly corresponds to the cross section of the shell. The burrow is a little larger in all directions than

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the fully formed shell inhabiting it, but in length it is about two inches longer than the shell. The actual area of contact of the walls of the burrow with the shell is marked off as a slightly brownish-coloured area, the shape of which is more or less similar to the shape of the shell. The uncoloured area at the bottom of the borrow shows the position where the foot lies in the living animal. The bivalve lies in the burrow firmly anchored by its large extensive foot at the anterior end and is capable of a limited amount of movement along the longitudinal axis of the burrow by the contraction and expansion of the foot. In nature I have observed the animals fully expanded and in this condition their posterior ends come to lie very close to the mouth of the burrow. On touching the animal with a finger, it at once withdrew itself for a distance of two inches or more in the burrow. When an animal is forcibly pulled out, it is seen to have its foot extended considerably beyond the valves and thickly coated with sand or clay according to the nature of the rock. It is usually very difficult to draw out the animal from its burrow, but the Uriya coolies have devised a simple and efficient mechanism to dislodge them from their burrows. I have described it towards the end of this note.

The burrows run in all directions on an inclined plane and it often happens that two or more become continuous. I have observed two or more animals living in the same burrow which condition probably results from the breaking up of the walls between the neighbouring burrows. There is another significant point and that is that all the young individuals were found in fully formed burrows and in them the valves could be tightly closed. Two or more young individuals may come to lie in the same burrow and may enlarge it according to their requirements as they grow. Mr. Ede's statement that they change from hole to hole when the river falls was borne out by the Uriya coolies at Katlicherra, but from the inactivity which the animals showed in captivity it is rather difficult to credit them with such a feat.

The Boring Mechanism.

The tools of boring in this animal, as it is in *Teredo*,[1] are the shell and the foot. The foot as I have already pointed out is firmly glued on at the bottom of the burrow either by mere adpression or by the secretion of some viscid substance. By the action of the muscles of the foot the shell is moved to and fro in a longitudinal direction in the burrow and the coarse ridges on the shell coming in contact with the walls of the burrow help in enlarging it. There are several proofs for this assertion, (1) the inner surface of the burrow is provided with

[1] Miller, *University of California Publication in Zoology*, XXVI, pp. 41–80, pls. iii–vi (1924).

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broad longitudinal grooves corresponding to the ridges on the shell, (2) the inner surface of the burrow is brownish in places where the shell rubs against it, (3) the anterior region is greatly worn down in older shells, (4) along the greater portion of the dorsal surface of the shell the ridges become worn out and in older shells the surface becomes more or less smooth. Mr. Ede has observed these animals " periodically eject muddy water from their holes, of the colour of the rocks in which they live." This is as it should be because all the excavated matter will be taken into the mantle cavity at the anterior end and be passed out in the way suggested above. I am unable to understand how a new burrow is started by the animal. Annandale explains it thus. He says, " Having found a suitable spot where the surface is irregular or shelved, it applies the anterior end of the shell to the surface and by alternately thrusting out and drawing in its foot moves the sharp margin up and down against the rock, thus cutting a groove into which it thrusts itself." From observations made in the field I am led to believe that the animals do not start fresh burrows. The young ones creep into holes and crevices in the rocks and go on enlarging them according to their requirements. All the young individuals that I collected were found in more or less fully formed burrows. Moreover on several pieces of rocks honey-combed with the burrows of *Balwantia* that I examined out of water, I was only able to find fully formed burrows. These animals are stated to change from hole to hole. This indicates that the animals do not start fresh burrows but accommodate themselves in those that are already present. I kept several specimens of this species under observation in a tub full of water for four days. I placed fairly big pieces of hard blue clay and friable sandstone in the same tub. The animals during this period showed absolutely no movement and all the time lay quietly in one place with the foot fully extended. This may in a way show that the animals are not capable of starting fresh burrows. I ought to have watched the behavior of an animal by introducing it into a fully formed burrow. This experiment did not strike me in the field though its results would have been of great use in understanding the problem.

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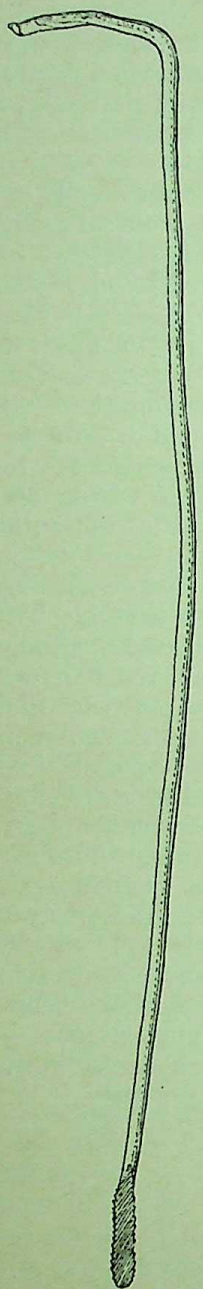

Note on an Instrument used by the Uriya Coolies for collecting the bivalve, Balwantia soleniformis.

The instrument used by the Uriya coolies for collecting this bivalve is very simple. It consists of a piece of wire about one-eighth of an inch thick and over a foot in length. It is flattened at one end for a distance of about one inch and an inch and a half of it at the other end is bent at a right angle to form a handle. The flattened portion is denticulated along the margin. When an animal is located in a burrow, its foot is tickled with the flat end of the instrument. This helps in two ways, the animal withdraws its foot as much as it can and secondly the rock in the immediate neighbourhood of the foot is scraped and the foot is set free. The animal with the foot free can be easily pulled out of the burrow. The wire is sometimes used so mercilessly that the foot is cut up into several pieces. I have myself used this device and have found it very efficient. I was informed by the Uriya coolies that in former days sharp bamboo sticks were used for the same purpose.

Text fig. 3.—An instrument used by the Uriya coolies for collecting *Balwantia soleniformis* (Benson).

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Note on a Hermaphrodite Loach.

By Sundar Lal Hora, D.Sc.,
Officiating Superintendent, Zoological Survey of India.

(Communicated by permission of the Director, Zoological Survey of India.)

Several instances of teratological hermaphroditism have been recorded among Teleostean fishes,[1] but so far as I am aware this phenomenon has not been observed among loaches (Cobitidae). Recently while going through the named and unnamed material of the fishes of the genus *Nemachilus* in the collection of the Zoological Survey of India a case of hermaphroditism in *Nemachilus montanus* (McClelland) has come under my notice. In our collection there are three specimens of this species, one is a ripe male, another a ripe female and the third is a hermaphrodite. The last specimen is much larger than the other two and though externally it is provided with certain secondary sexual characters of the male, internally it possesses a well developed ovary and a pair of rudimentary testes. In view of the rarety of such instances, it may be of interest to record the details of this find.

In certain species of *Nemachilus* the male is provided with well-marked secondary sexual characters[2] in the form of a pad below the anterior margin of the eye and a series of spine-like outgrowths on the dorsal aspect of the pectoral fins. The males of *N. montanus* are characterized by the possession of such characters. In the hermaphrodite specimen there is a pad below the eye which is much less developed than that of the normal male and the spines on the pectoral fins are absent. The abnormal condition of the secondary sexual characters, and the relatively large size of the specimen led me to examine its internal organs. On an examination I found that the whole of the body cavity was full of an ovary (the ovaries of the two sides have apparently joined to form a single large ovary) containing well-developed eggs. On the ventral surface of the ovary at the anterior end were found two pale pink, ductless glands one just behind the liver on the left and the other below the stomach on the right side. They were closely pressed against the ovary and

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[1] For references see Gemmill's *Teratology of Fishes*, pp. 46-48 (Glasgow: 1912); Dean's *Bibliography of Fishes* III, pp. 503, 504 (New York: 1923); Bounhiol and Pron, *C. R. Acad. Sci. Paris CLXII*, pp. 273-276 (1916) and Bamber, *Proc. Zool. Soc. London*, pp. 216-219, pls. i, ii (1917).

[2] Hora, *Rec. Ind. Mus.* XXIV, pp. 81-83 (1922).

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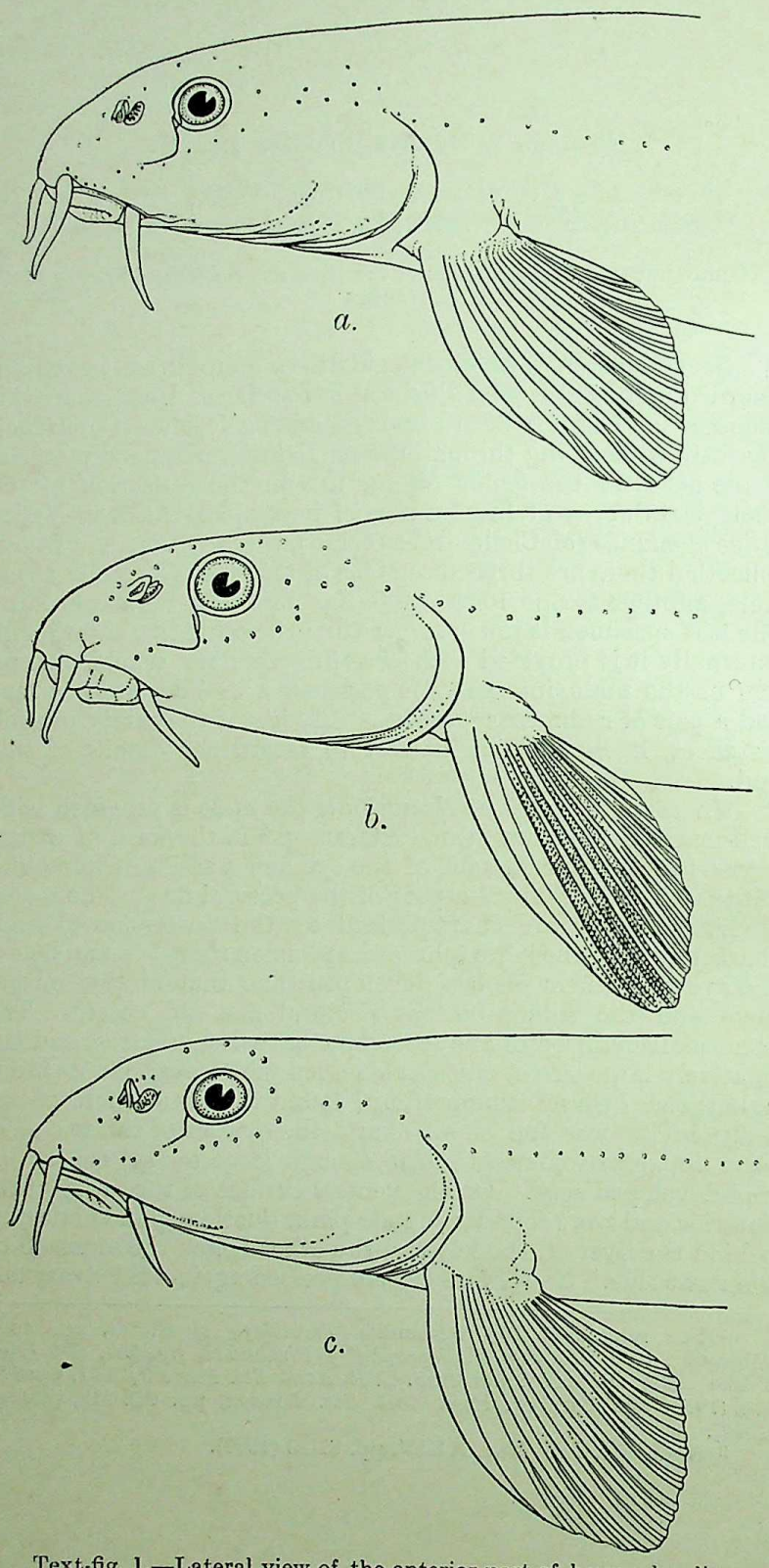

Text-fig. 1.—Lateral view of the anterior part of hermaphrodite, male and female specimens of *Nemachilus montanus* showing secondary sexual characters.

a. Hermaphrodite ; *b*. Male ; *c*. Female.

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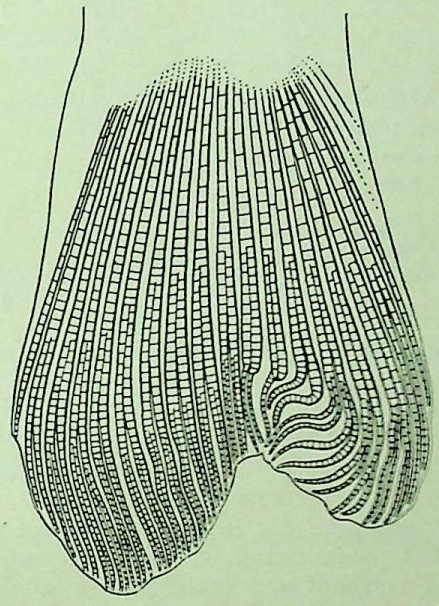
when removed left definite depressions in their places. On examining the sections of these glands under the microscope and by comparing them with the sections of the testis of a ripe male they were found to be rudimentary testes. As the tissues were not well preserved for histological details, it is not possible to say much regarding the minute structure of these glands. Moreover, all the specimens were already opened out before this peculiarity was observed so it is difficult to make out the details of the ducts of the ovaries.

The hermaphrodite specimen shows other abnormalities besides the large size, to which I have already referred. The rays of the upper lobe of the caudal fin are deformed, instead of



Text-fig. 2.—The deformed caudal fin of the hermaphrodite loach.

being straight and pointing backwards, they are bent downwards at an angle. The colouration is also somewhat different.

I have not been able to observe any connection between the testes and the ovary so it is difficult to decide whether they once formed a continuous gland or not. In Teleostei as a rule among hermaphrodites it is the "differentiation of the same gland into organically continuous ovary and testis."[1] In my specimen ovaries are full of ripe eggs while the testes are ductless and rudimentary. From the nature of the secondary sexual characters it appears to me quite probable that the specimen was a male to begin with and its developing testes induced the formation of the secondary sexual characters. The ovaries.

1 Howes, *Journ. Linn. Soc. London*, XXIII, pp. 539-558 (1891).

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which appeared at a somewhat later stage, soon became the dominant factor and checked the growth of the testes and consequently of the secondary sexual characters. From the size of the fish it is also clear that some violent physiological changes in the metabolism must have taken place at the time of change in the sex.

I give below the principal measurements of the specimens to show differences in proportions, etc.

Measurements in Millimetres.

Total length including caudal	64.2 ♂	68.2 ♀	87.0 ♂
Length of caudal	11·0	11·7	15·5
Length of head	12·0	12·3	15·0
Depth of body	7·8	7·5	12·2
Length of snout	5·0	5·0	6·2
Interorbital distance	3·0	3·6	4·0
Length of caudal peduncle ..	6·0	6·8	7·3
Least height of caudal peduncle ..	5·3	5·8	7·3
Longest ray of dorsal	8·1	9·5	10·5
Length of pectoral	11·0	10·5	15·0
Length of ventral	9·0	9·6	12·0
Longest ray of anal	7·7	8·4	9·2
Length of ovary		20·5	38·0

The hermaphrodite loach along with the other two specimens was collected by me in the Giri stream near Simla in 1921.

Major Sewell suggests that it is quite probable that the hermaphrodite is an old female in which the secondary sexual characters of the male have just started to appear on account of the failure of the internal secretion from the ovaries due to old age. The size of the specimen also lends considerable weight to this suggestion. This phenomenon is, moreover, not rare among other groups of vertebrates. I am greatly indebted to Major Sewell for going through the manuscript and making valuable suggestions.

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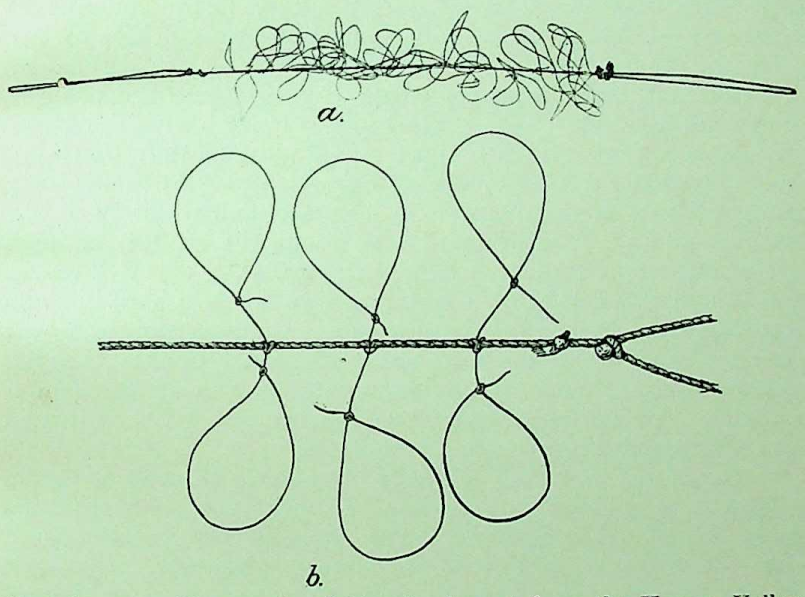
On a Peculiar Fishing Implement from the Kangra Valley, Punjab.

By Sunder Lal Hora, D.Sc., F. *Officiating Superintendent, Zoological Survey of India.*

(Read at the Fourteenth Annual Meeting of the Indian Science Congress, and published by permission of the Director, Zoological Survey of India.)

During my recent tour to the Kangra Valley (May-June, 1926) an interesting type of fishing implement, locally known as *Kalerni*, has come to my notice. I am greatly indebted to Mr. Prem Das, sub-inspector of fisheries, Kangra, for drawing my attention to it and for getting me a specimen for the Indian



Text-figure 1.—The peculiar fishing implement from the Kangra Valley, Punjabi.
a. Photograph of Kalerni (greatly reduced).
b. Sketch showing the type of knots × $\frac{1}{1}$.

Museum collection. He has also supplied me with valuable notes about it.

The specimen consists of three pieces of thin hemp twine, each about a foot and a quarter in length. Of these, two pieces are knotted, so that each forms a running noose and are

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firmly fastened to the two ends of the third central piece. To this piece are tied at irregular intervals a number of horse hair loops with running nooses. For this purpose a long hair is taken and tied to the twine in the centre of its length, the two free halves are then knotted into loops. As many as 30 such double loops are present in the specimen in my possession.

This implement is used in the rapid-flowing waters of our shallow, rocky streams. The fishes of such streams are mostly, bottom feeders and are capable of attaching themselves to rocks and stones by means of suckers and frictional devices of various kinds. They usually dart about from rock to rock and are thus enabled to progress in very swift currents. The other type of fish that frequent the rapids are the powerful migratory fishes like the well known *Mahaseer* (*Barbus tor, sensu lato*) and several other species of *Barbus* that migrate up-stream at certain seasons for breeding purposes and return to the plains when the season is over. Owing to the shallowness of the water in the hill streams they have to keep quite close to the bottom when moving about. It is for the capture of such fishes that *Kalerni* is used. It is fixed in the course of a rapid stream among big boulders and rocks by the help of two pieces of stone lodged in loops formed by the two end pieces of twine and securely fastened there by adjusting the position of the sliding knots. The central piece of twine with the horse-hair loops is kept stretched tight. Fish moving up or down the stream are caught in the loops and the creatures in their struggles are then rendered helpless by the mechanical action of the running knots. A fisherman uses about 50 to 100 of such implements at a time and lifts them up after every three or four hours, some possibly containing fish, while others may be quite empty. When the implements are taken out of water after the day's work, the hairs are lubricated with *ghee* (clarified butter) to keep them soft and strong and to prevent them from cracking. During use if any hair gets straightened, it is turned into a loop again before using it next day.

From the fact that a single horse-hair is used to make a loop it is evident that *Kalerni* is only meant for catching small fish. In the Kangra Valley most of fish are of a small size. It is also possible that hill stream fishes with "suckers" do not struggle much because during the greater part of their life they remain quietly sticking to stones As an instance I might cite the case of a species of *Glyptothorax* from Manipur[1] locally known as *Nga-pang* or the innocent fish. This species is said to stick even faster to rocks and stones when touched with something instead of swimming away to safety It is thus very easily secured and hence the name *Nga-pang*.

---

[1] Hora, *Rec. Ind. Mus.* XXII, p. 173 (1921).

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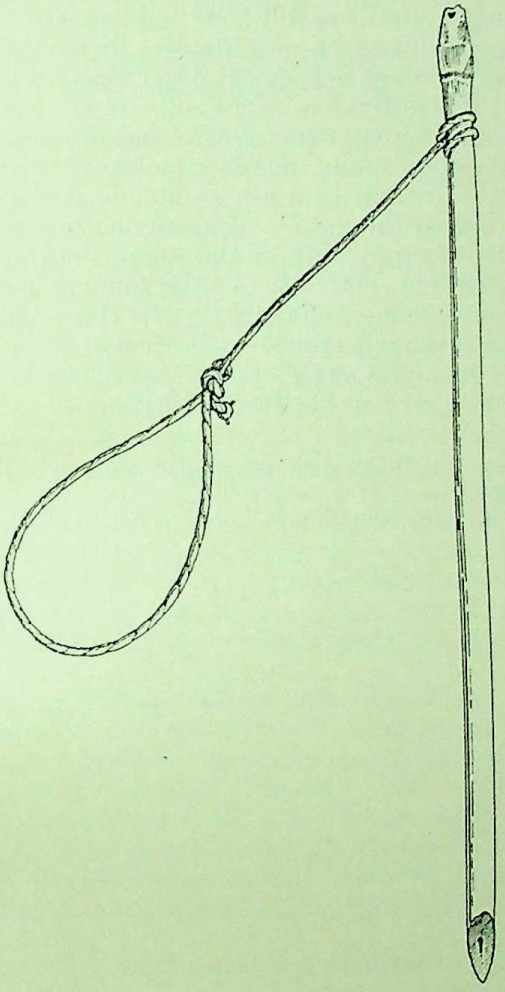
Various kinds of fishing implements have been reported from India and Burma and some of those that are used in the rapid waters of our torrential streams are very ingenious devices, but there is not one which, to the best of my knowledge, agrees



Text-figure 2.—The running Fish-noose (*Aikeghi*) used by the Sema Nagas (greatly reduced). The stick is cut short for convenience.

with *Kalerni* or has anything in common with it. The *Kalerni* is modelled after certain devices that are used all over India, Burma and the adjacent countries for snaring birds. One such device from Java in our collection (No. 6866) is labelled as, " A model of a fishing implement," but Mr. A. Pedler has entered the following

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remark in our register against the same number, "Evidently an implement for snaring birds?" An examination of the model leaves no doubt that it must have been an implement for snaring birds and that it could not have been meant for fishing. Dr. Satya Churn Law has informed me that unfortunately our knowledge of the various devices used in bird catching in India is very meagre[1] and it is still more unfortunate that the several interesting specimens of such devices in the collection of the Indian Museum have not, as yet, been reported upon.

Mr. J. H. Hutton has very kindly drawn my attention to a fish-noose used by the Sema Nagas and described by himself.[2] It "consists of a running noose, attached to the end of a stick, which is held in front of a fish swimming in water and jerked tight as it passes through." The running noose in this device consists of fibre (probably of the sago-palm) and Mr. Hutton has informed me that "in slowly running but clear water the contrivance is most effective." Mr. Hutton has presented a specimen of this device for the collection of the Indian Museum (the handle has been cut short for convenience) and I take this opportunity to give an illustration of it here.

---

[1] Harper, "On Bird-catching in India," *Avic. Mag.* (N.S.) I, pp. 262-268, pl. (1903).

[2] Hutton, "The Sema Nagas," p. 82 (London: 1921).

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On the occurrence of the Polyzoon, *Plumatella fruticosa*, in running water in the Kangra Valley, Punjab.

By SUNDER LAL HORA, D.Sc., F. *Officiating Superintendent, Zoological Survey of India.*

(Communicated by permission of the Director, Zoological Survey of India.)

Annandale [1] when discussing the biology of *Plumatella fruticosa* Allman, observed that "This species is the only one that I have seen in running water in India, and the specimens obtained in the jungle stream in Travancore are the only specimens I have taken in these circumstances." During my recent tour in the Kangra Valley (May-June, 1926) I observed a fine specimen of a Polyzoon colony growing on the upper surface of a piece of stone in clear running water in a small rocky stream north-west of Shahpur Dak Bungalow beyond the local bazaar. There was very little water in the stream and here and there pools occurred in its course. In places there was a growth of filamentous algae. May-June is the driest part of the year in the Kangra Valley and hence there was little water in the stream. During the rains, I was informed, it swells up considerably and becomes a characteristic, rapid running hill stream.

My specimen belongs to the var. *stricta* and I am able to lend support to Annandale's view that this form occurs in places "in which there was reason to suspect a lack of minute life (and therefore of food)." The stream, in which the specimen was collected, did not contain much of "minute life." The colony was found growing not in pools in the course of the stream, but in very shallow, clear and rapid running water. Statoblasts of both kinds were found inside the zoaria.

From the Punjab this species has hitherto been recorded from Lahore and Simla. It is recorded here from the Kangra Valley for the first time.

Unfortunately I was not aware of the nature of my find in the field and did not look for more specimens up and down the stream in likely places. During my extensive tour in the Kangra Valley this was, however, the solitary instance of a Polyzoon colony in running water that came under my notice.

1 Annandale, *Faun. Brit. Ind. Freshwater Sponges, Hydroids and Polyzoa*, p. 219 (1911).

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EXPLANATION OF PLATE.

The Polyzoon, *Plumatella fruticosa* form *stricta* from running water in the Kangra Valley, Punjab.

1. The colony as it was found occurring on the upper surface of a stone (nat. size).

2. A portion of the same colony magnified four times to show the characteristics of the form *stricta*.

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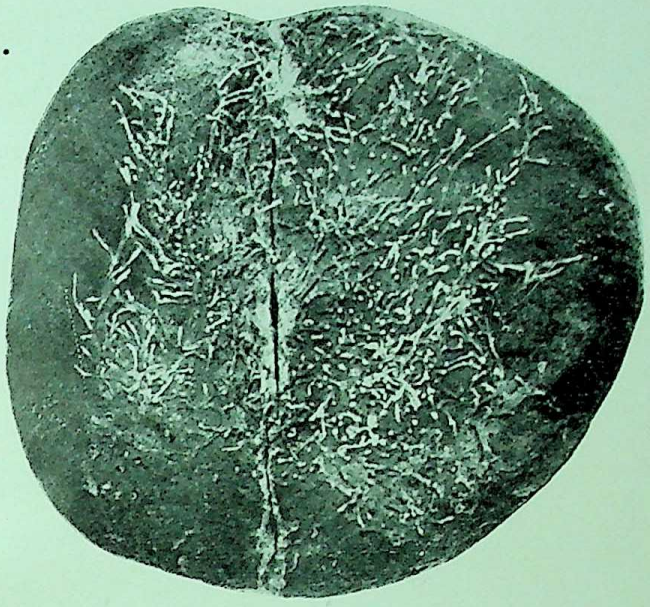

1.

2.

Plumatella fruticosa from Kangra Valley, Punjab.

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Digestive and Reproductive Systems of the Male Ant *Dorylus labiatus* Schuck.

By Durgadas Mukerjee, M.Sc., *Lecturer in Zoology, Calcutta University.*

(Communicated by Dr. S. L. Hora.)

With a view to throw some light on the question of vespoid affinity of the Dorylinae, and to inquire to what extent the Dorylinae retain the primitive ancestral condition, the anatomy of *Dorylus labiatus* was undertaken, the particular species being chosen as available in the locality in a fresh condition.

Alimentary System.

The alimentary canal of the male of *D. labiatus* is straight and simple, and as long as the body (fig. 1). It differs from those of other ants in general by the absence of a crop and a prominent proventriculus. The oesophagus (fig. 1-*a*.) is a simple, narrow tube of considerable length, forming more than half the total length of the digestive system and is uniform in diameter. It traverses through the thorax and the node extending as far as the first segment of the gaster, where it is connected with the midgut or chylific stomach (fig. 1-*b*.), the point of junction being marked by a narrow constriction. The chylific stomach is elongated in form and is wide in diameter covering nearly three abdominal segments. It is distensible, the extent varying according to its contents. The posterior end of the chylific stomach lies below the testicular ends of the vasa deferentia, and in some cases, due to great development and consequent coalescence of the anterior ends of the pair of seminal ducts in the mesial plane, the portion of the alimentary canal is pushed more to the ventral side and lies hidden beneath the reproductive system. Beyond this region the alimentary canal continues as the hind-gut (fig. 1-*d*.), the limit of the hind-gut and mid-gut being marked by the pyloric constriction and the presence of a large number of malpighian tubules (fig. 1-*c*) arranged in a whorl round the most anterior end of the intestine. The hind-gut may be divided, due to variations in its diameter, into ileum and colon, and ends in an enlarged rectum. The ileum (fig. 1-*d*.) lies enclosed between the accessory glands of the reproductive system and slopes upwards from before backwards, so that the colon, which is short in length, comes to lie over the dorsal side of the ejaculatory

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duct. The hind gut, while still occupying the median longitudinal axis, passes over the annular lamina of the external genitalia and continues as the rectum (fig. 1. *f-g*). The rectum lies outside the external genitalia, being dorsal to it and beneath the last two tergites of the abdominal segments. The rectum contains small rectal glands and terminates as the anal opening below the last tergite of the abdomen.

Reproductive System.

The reproductive system consists of :—

(*a*) a pair of testes arranged in bunches and symmetrical on each side.
(*b*) a pair of long seminal ducts differentiated into vasa efferentia, vasa deferentia and vesiculae seminales, from before backwards.
(*c*) a pair of well developed accessory glands.
(*d*) a median ejaculatory duct.
(*e*) a pair of chitinous penes and a complicated gonapophysis.

Each testicular gland is follicular in shape, minute, and uniform in size, on both sides of all the individuals examined. The follicular testes (fig. 2. t.) are arranged in a single bunch on each side, each bunch containing a fair number of follicles. Each follicle contains a central lumen and is in communication with the vas efferens (fig. 5. *b*.). The latter is a short thin walled narrow duct for the passage of the spermatozoa into the vas deferens. As far as the testes are concerned, *D. labiatus* approaches *Vespa*, but is marked off from the latter in having its testes not enclosed within a reflected membrane as in the Vespinæ described by Bordas.[1]

The seminal ducts bear the testes at their anterior ends and posteriorly open into the base of the accessory glands near the junction of the latter with the ejaculatory duct (fig-7.). The vasa efferentia (fig 5. *b*), which form the anterior ends of the seminal ducts, are short, narrow, and straight, and well marked off from the rest of the seminal ducts by their narrow uniform lumen. The remainder of the seminal duct is further divided antero-posteriorly into vas deferens (fig. 5. *d*.) and vesicula seminalis (fig. 5-*e*.) due to their difference in diameter. The vas deferens is a long, thin-walled tubular duct opening into the apex of the vesicula seminalis and its anterior end near its junction with the vas efferens is greatly dilated to form a spherical collecting sac (fig 5-*c*). The collecting sac was found at the anterior ends of vasa deferentia in all the individuals

[1] Bordas—*Ann. Sci. Nat.* XIX; pp. 230–238, pl. vii (1895).

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examined and contained a mass of mature spermatozoa rolled into a ball. Apparently this portion also served the purpose of storing spermatozoa. The remaining portion of the vas deferens showed considerable variations in shape and size, the total length being more or less equal to that of the vesicula seminalis (fig. 5). In most cases (fig. 2) the vas deferens (fig. 2 *f-e.*) of each side arising from the corresponding vesicula seminalis (fig. 2 *g.*) lies deflexed on the ventral surface of the latter in the form of a U, the testicular mass projecting forwards beyond the vesicula seminalis. In some (as in fig. 4 and 5) it is more or less straight, having an uniform diameter, while occasionally vesicular dilatations irregular in outline (fig. 4.) are seen on each side of the vas deferens. Often the swelled regions firmly touch each other in the mesial plane. The swelled regions were found packed with mature spermatozoa. The vesicula seminalis is a portion of the vas deferens greatly dilated in the form of an oval sac to act as a sperm reservoir. In some instances a diverticulum (fig. 5-*f.*) was seen arising from the vesicula seminalis. The vesicula seminalis opens by means of a narrow duct (fig. 5-*g.*) into the base of the corresponding accessory glands near their posterior edge on the ventral side. In one instance (fig. 4.), however, the seminal duct and the accessory gland of one side open into a common duct surrounded by an enveloping membrane (fig. 4-*b.*). This common duct opens into the ejaculatory duct, the parts situated on the other side remaining normal in form.

The pair of accessory glands are conspicuous bodies due to their large size and thick wall. The accessory gland of each side is connected with the other at the base (fig. 7.) and each of them opens directly into the ejaculatory duct after receiving the seminal duct. The pair of accessory glands together form a horse-shoe shaped body (fig. 7.), whose limbs are nearly vertical, the tips being directed upwards and forwards. Often the two tips meet one another in the middle line thus enclosing a big space through which the alimentary canal passes. In some cases (fig. 6.) the accessory gland of one side gives rise to an appendix (fig. 6. *a*) similar to it in form and structure. The accessory glands secrete a substance that mixes with the seminal fluid, perhaps to form spermatophores.

The ejaculatory duct arises as a long, median, unpaired duct (fig. 2 *b*), its length being half of the genital armature. In most cases it is devoid of any accessory diverticulum. In one case a single blind diverticulum (fig. 2. *c*) was seen arising from it. A pair of chitinous penes (fig. 2. *d*) is present on its ventral surface near the terminal opening of the duct.

Conclusion.

In some cases, food may be considered as one of the factors in determining the length and shape of the alimentary canal.

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The straight and simple gut of *D. labiatus* may refer to the comparative digestibility of its food. However, as no solid food was found in the alimentary canal, and males kept in captivity died within a day or two, without partaking of any food, the nature of the latter could not be inferred.

It is interesting to note the general resemblance of the alimentary canal of *D. labiatus* and *Polistes gallica* as described by Bordas.[1] The male of *D. labiatus* differs from *Vespa rufa* and from workers of other species of ants in general, in the absence of a prominent crop and intestinal coils.

As regards the male reproductive system we find the existence of a striking similarity between *D. labiatus* and *Vespa*[1] the former differing from the latter in having no reflected membrane over the testes.

The structure of the alimentary canal and the reproductive system of *D. labiatus*, due to the Vespine affinity they exhibit, may be taken as evidence of the possible origin of ants from ancestral Vespoids.[2]

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[1] Bordas—*op. cit.* XX, pp. 144–166, pl. viii (1895).
[2] Wheeler—*Social life among insects*, p. 150, New York. (1923.)

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EXPLANATION OF FIGURES.

(Figures are drawn diagramatically.)

1. Alimentary canal of *Dorylus labiatus* ♂ (with the anterior end cut out.)

(*a*) oesophagus.
(*b*) stomach.
(*c*) malpighian tubules.
(*d*) ileum.
(*e*) colon.
(*f-g*) Rectum.

2. Male reproductive system of *D. labiatus* showing bend in the vas deferens.

(*a*) accessory gland.
(*b*) ejaculatory duct.
(*c*) diverticulum of ejaculatory duct.
(*d*) chitinous penis.
(*e*) collecting sac.
(*f*) seminal duct.
(*g*) vesicula seminalis.
(*t*) testes.

3. Lateral view of the same to show the opening of vas deferens to accessory gland.

4. Ventral view of genitalia showing dilatation of vas deferens, and the common duct of accessory gland and vas deferens of one side.

(*a*) dilatation of vas deferens.
(*b*) common duct of accessory gland and seminal duct.

5. Lateral view of vas deferens and vesicula seminalis showing a diverticulum of the latter.

(*a*) testes.
(*b*) vas efferens.
(*c*) collecting sac.
(*d*) vas deferens.
(*e*) vesicula seminalis.
(*f*) diverticulum of vesicula seminalis.
(*g*) the duct opening into the accessory gland.

6. Genitalia showing appendix of accessory gland.

(*a*) appendix of accessory gland.

7. Genitalia showing the horse-shoe shape of accessory gland with the seminal ducts drawn apart.

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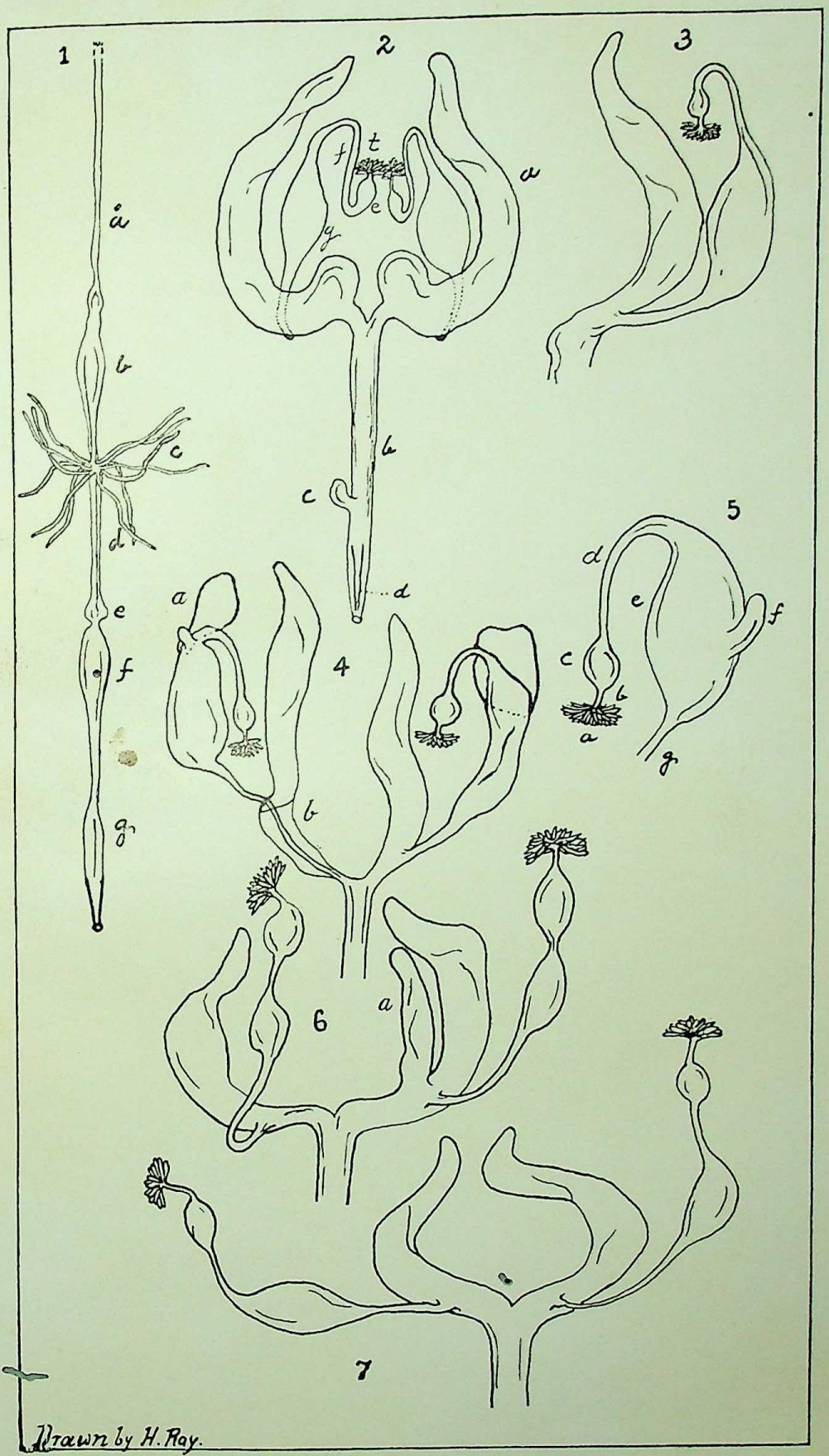

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Proceedings
of the
Asiatic Society of Bengal
for 1925.

[*Journal and Proceedings of the Asiatic Society of Bengal.*]

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Proceedings, Asiatic Society of Bengal, 1925.

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Proceedings of the Annual Meeting, 1926.

The Annual Meeting of the Asiatic Society of Bengal was held on Monday, the 1st February, 1926, at 5-30 p.m.

Present:

His Excellency the Right Hon'ble Victor Alexander George Robert Bulwer-Lytton, Earl of Lytton, P.C., G.C.I.E., Governor of Bengal, Patron.

Sir Rajendra Nath Mookerjee, K.C.I.E., K.C.V.O., President, in the Chair.

Members:

Abdul Ali, Mr. A. F. M.
Abdul Wali, Maulavi
Acton, Major H. W.
Agharkar, Dr. S. P.
Aiyer, Mr. R. S. V.
Atkinson, Mr. A. C.
Aulad Hasan, Sayid
Bal, Dr. S. N.
Banerjee, Mr. P. N.
Barwell, Lt.-Col. N. F.
Basheer Hossain, Mr. Md.
Bery, Mr. A. R.
Bhandarkar, Dr. D. R.
Biswas, Mr. K.
Bose, Dr. S. R.
Brahmachari, Dr. U. N.
Brown, Mr. Percy
Browne, Capt. L. E.
Brühl, Dr. P. J.
Chakladhar, Mr. H. C.
Chakravarti, Mr. Nilmani
Chapman, Mr. J. A.
Chaudhuri, Dr. B. L.
Chaudhuri, Mr. J.
Chopra, Mr. B. N.
Chopra, Major R. N.
Christie, Dr. W. A. K.
Cleghorn, Miss M. L.
Das, Mr. A. N.
Das-Gupta, Mr. H. C.
Das-Gupta, Mr. S. N.
Datta, Mr. Kiran Chandra
De, Mr. K. C.
Deb, Kumar H. K.
Deb, Raja Kshitindra
Derviche-Jones, Lt.-Col. A. D.
Dods, Mr. W. K.
Fleming, Mr. Andrew
Ghose, The Hon'ble Mr. Justice C. C., Kt.
Ghosh, Dr. Ekendra Nath
Ghosh, Mr. T. P.
Greaves, The Hon'ble Mr. Justice W. E., Kt.
Guha, Dr. B. S.
Gupta, Mr. N.
Hannah, Mr. H. Bruce
Hendry, Mr. C. A. St. John
Hidayat Hosain, Dr. M.
Hobbs, Mr. H.
Hora, Dr. S. L.
Insch, Mr. Jas.
Kanjilal, Mr. M. N.
Kazim Shirazi, Aga Md.
Knowles, Major R.
Law, Dr. S. C.
Mahfuzul Haq, Mr. M.
Manen, Mr. Johan van
Megaw, Lt.-Col. J. W. D.
Miles, Mr. W. H.
Mirza, Mr. M. B.
Mitra, Mr. J. C.
Mitter, Mr. B. L.
Mitter, Mr. B. P. D.
Mookerjee, Mr. P. N.
Mukherjee, Mr. Braja Lal
Mukherjee, Mr. Jogendra Nath
Mukherjee, Mr. M. N.
Mukherjee, Mr. N.
Narayana Swamy, Mr. V.
Raman, Dr. C. V.
Rao, Dr. H. Srinivasa
Ray, Kumar Sarat Kumar
Richardson, Mr. R. H.
Sadiq, Hakim S. M.
Sanaullah, Mr. M.
Seth, Mr. M. J.
Sewell, Major R. B. S.
Sharif, Mr. M.
Shastri, MM. Haraprasad

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Singhania, Mr. A. D.
Singh-Roy, Mr. B. P.
Sircar, Mr. Ganapati
Stapleton, Mr. H. E.
Stark, Mr. L.
Tipper, Mr. G. H.
Varugis, Mr. George
Walton, Mr. E. B.

and several others.

Visitors:

Armstrong, Mr. & Mrs. J. E.
Banerjee, Mr. W. C.
Banerji, Mr. Nalini Mohan
Baptist, Mr. & Mrs. John
Biswas, Mr. Rampada
Bose, Rai Bahadur Chuni Lal
Bose, Mr. S.
Brahmachari, Mr. P.
Brahmachari, Mr. S. C.
Bruford, Mr. S. J.
Chakravarti, Mr. B. B.
Chakravarti, Mr. S. K.
Chakravarti, Mr. Shyam Lal
Chaudhuri, Mr. J. M.
Chaudhuri, Mr. J.
Crete, Mr. P. H.
Das Gupta, Mr. Rajendra Nath
Devi, Mrs. Rewa
Dover, Mr. C.
Ghosh, Mr. A. N.
Ghuznavi, Mr. A. K.
Gupta, Mr. Prafulla K.
Harris, Mr. A. E.
Hooper, Mr. I. M.
Hussain, Mr. M. N.
Knight, Mr. P.
Kohli, Mr. D. N.
Kramrisch, Dr. Stella
McPherson, Mr. R.
Majumdar, Mr A. K.
Mandal, Mr G. C.
Mukherjee, Mr. Ananth Nath
Mukherjee, Mr. H. N.
Mukherjee, Mr. J. N.
Mukherjee, Mr. S. K.
Paul, Mr. K. S.
Rajagopalan, Mr. J. S.
Sen, Mr. Bimal
Sen, Mr. Jatis
Seth, Mr. P. D.
Shastri, Mr. Rasamay
Sinha-Sarma, Mr. S. C.
Stephen, Mr. A.
Suhrawardy, The Hon'ble Mr. Justice Z.
Ukil, Dr. A. C.
Vermiere, Rev. Fr. M.
Wilkinson, Mr. H. R.

and several others.

The President ordered the distribution of the voting papers for the election of Officers and Members of Council for 1926, and for the election of Ordinary Fellows proposed by Council, and appointed Dr. W. A. K. Christie and Dr. S. L. Hora to be scrutineers.

The President also ordered the distribution of copies of the Annual Report for 1925 and called on the General Secretary to make a few remarks upon it.

The Annual Report was then presented. (See page xxxiv.)

At 5-55 p.m., the President vacated the Chair and invited the Hon'ble Mr. Justice W. Ewart Greaves, Kt., to occupy it during his absence from the room.

The President, the Treasurer, and the General Secretary then left the meeting room to receive His Excellency, the Earl of Lytton, Governor of Bengal, Patron of the Society, at the entrance of the building.

On the arrival of the Patron at 6 p.m., the President introduced the Council to him, and thereupon addressed the following words of welcome:—

Your Excellency, Ladies and Gentlemen,

It is my good fortune and a source of great pleasure to me

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that I have to extend again this year, on behalf of the Members of the Asiatic Society of Bengal, a most hearty welcome to our Patron. Your Excellency has always taken a keen interest in the affairs of our Society and your encouragement has always been an inspiring stimulus to us to forward the cause of science and learning. We hope, Sir, that the progress made by the Society under your distinguished patronage has pleased you. Your great interest in our affairs, your consistent efforts to further the advancement of knowledge, your keen desire to foster the ideals of culture and learning in Bengal will always remain with us as your special and valuable contribution to the work of our Society. We are grateful to your Excellency for sparing for us your valuable time this evening and I beg to offer you to-day a respectful and a most cordial welcome.

The President invited the Patron to take the Chair.

The Patron called upon the retiring President to read his Annual Address. (See page ix.)

The retiring President called upon the scrutineers to report and announced the results of the election of Council. (See page xxvi.)

The retiring President gave place to the President for 1926, who thanked the Society as follows :—

Your Excellency, Ladies and Gentlemen,

In returning thanks for my election as President of the Asiatic Society of Bengal, I should like to say how deeply I appreciate the honour you have conferred upon me. I am fully aware of the responsibility attached to this office, the highest it is in the power of the Society to bestow. Despite Sir Rajendra Nath Mookerjee's all too generous references to myself, I am conscious that my claim to your suffrages lies in my long and intimate acquaintance with the work of the Society. With the assistance of the Council elected to-night, I will endeavour, so far as in me lies, to promote the true interests of the Society and its Members.

Among the many other duties of a learned Society, there are three which I should particularly like to mention. Firstly, there is the provision of opportunities for the meeting of Members and the discussion of subjects of mutual interest. This is adequately provided for by our Monthly Meetings, and also by our healthy child, the Science Congress. Secondly, there is the publication at regular intervals of a journal containing articles of interest to all classes of members. I am glad to say that our arrears in this respect are gradually being brought up-to-date. Thirdly, there is the maintenance of a Library adequate to the needs of the Members. The Asiatic Society of Bengal is not a specialist Society, but is, I might almost say, limitless in its interests. As such, the Society cannot hope to provide a Library which will be of value to specialists in every branch of learning and this is the less

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necessary as the specialist services, the Geological Survey of India, the Zoological Survey of India and many others, have libraries which are easy of access. The Asiatic Society, however, has to see that its Library affords facilities for workers in literary, philosophical and anthropological branches of activity. For many years, the annual sum spent on the Library has been inadequate and no definite policy has been pursued. I hope that, during my year of office, the Library may be placed on a sounder basis, for I believe that a really good library will be a great asset, as it appeals not only to the resident but also to the mofussil member. May I point out that the members of the Society owe a duty to the Library by the prompt return of the books borrowed? As Honorary Librarian for the past year, I have every week signed reminders for the return of books kept longer than the very generous period allowed under the Rules and included in the lists have been the names of members of Council who ought to be acquainted with our Library Regulations. Unless members are prepared to reciprocate in the work of preserving the library, the Council of the Society cannot be expected to provide the funds for its improvement. Finally, may I express the thanks of the Society to Sir Rajendra Nath Mookerjee and the outgoing Members of the Council? For two years, Sir Rajendra Nath has guided the destinies of the Society. Amidst his manifold activities he has found time to preside over the Council and Ordinary Monthly Meetings. During his term of office the Society has prospered, due very largely to his business experience and broad outlook on life, and I am sure that you will desire to express your appreciation of his services by according him a hearty vote of thanks.

It is now my privilege to ask our Patron, His Excellency the Governor of Bengal, to address us.

The Patron then addressed the meeting. (See page xxi.)

After the reading of the Patron's address, the President for 1926 proposed a vote of thanks as follows :—

I rise to propose a cordial vote of thanks to our Patron, His Excellency the Governor of Bengal. His Excellency's activities in furthering every form of scientific, literary and artistic efforts in this City and throughout the Province are well known, and it would be mere impertinence on my part to do more than mention them. We are grateful to him for coming here to-day and addressing us and we thank him for again evincing his continued interest in the work of this Society.

I would ask you, Ladies and Gentlemen, to show your cordial appreciation of His Excellency's presence by carrying this vote of thanks with acclamation.

The vote of thanks having been adopted by acclamation, the President for 1926 made the following announcements :—

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The Elliott Prize Trustees report that no paper of sufficient merit to be awarded the prize has been submitted.

Two prizes will be offered for 1926, for which a detailed announcement will be published in the *Calcutta Gazette.*

The Rev. P. O. Bodding is declared duly elected as an Ordinary Fellow of the Asiatic Society of Bengal.

The Barclay Memorial Medal is awarded biennially to that individual who, not having been a recipient of the Medal during the preceding seven years, shall be deemed up to 31st December preceding the award to have made the most meritorious contribution to Biology with special reference to India. The Medal for 1923 is awarded to Lieut.-Col. S. R. Christophers, C.I.E., O.B.E., I.M.S. Since 1904, Col. Christophers has been engaged in the investigation of insect-borne diseases. He has done pioneer work on the larvæ of Indian anopheline mosquitoes and has placed their classification on a sound basis. Every aspect of malaria has been the subject of his study. Blackwater fever and Kala-azar have also come under his view. As Director of the Kala azar Research Commission, he will no doubt be able to add much to the knowledge of the cause of infection in this terrible disease. The long list of papers published by Col. Christophers, alone and in collaboration, testifies to his activity in his chosen branch of research. I am glad that Col. Christophers is present and able to receive the Medal from the hands of our Patron.

The Barclay Memorial Medal for 1925 is awarded to Lieut.-Col. John Stephenson, C.I.E., Indian Medical Service (retd.). Col. Stephenson joined the Indian Medical Service in 1895, and after serving in various capacities became Professor of Biology at the Government College, Lahore, in 1906. In 1912, he became Professor of Zoology and Principal of the College and in 1918, Vice-Chancellor of the Punjab University. During this period, his services to Biology in India became of prime importance by the founding of a school of zoology which he raised to the proud distinction of the premier school in India. His pupils occupy many important biological posts in India. Col. Stephenson is an acknowledged authority on *oligochaeta* on which he has published many papers. He still continues to teach biology as he is now attached to the Zoological Department of the University of Edinburgh. Unfortunately, Col. Stephenson cannot be present to receive his medal at the hands of His Excellency. On his behalf, Major-General Hearn, Surgeon-General with the Government of Bengal, has consented to receive the medal and transmit it to the recipient. On behalf of the Asiatic Society, I thank General Hearn for his kindly act.

After these announcements, the President for 1926 declared the Annual Meeting to be dissolved and invited those present to remain seated to witness a demonstration by Prof. C. V.

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Raman on "*Molecular Behaviour at Liquid Surfaces*", and further invited the guests present after this demonstration to examine a collection of exhibits. (For descriptive list of exhibits, see page xxvii.)

At 7-15 p.m, the Patron left the meeting conducted by the President for 1926, after which an Ordinary Monthly Meeting was called for the transaction of business by Members, whilst visitors inspected the exhibits.

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ANNUAL ADDRESS, 1925-26.

It is my mournful duty to report the loss during the year of four distinguished Fellows, the Most Hon'ble Marquess Curzon of Kedleston, Sir Ramakrishna Bhandarkar, Sir Paul Vinogradoff and Dr. D. B. Spooner. Each of them was eminent in his own branch of learning and the world of letters is the poorer by their demise.

I do not propose to depart from the usual custom for your President to give you at the Annual Meeting a brief account of his stewardship. A full and detailed account of such activities will be found in the Annual Report. I will only draw your attention to a few salient points.

During the year 1925, the net addition in membership was 50, although the new elections numbered 108. The large number of losses is due to a stricter enforcement of rules regarding arrears in subscriptions, etc., most of which should really have been written off in previous years. We are, however, on a sounder basis now and the list, being made up-to-date, shows more correctly the real state of affairs.

Considerable progress has been made in improving the administrative machinery and full emphasis is given in the Annual Report on the various imperfections which still need attention. I hope that the improvement made in the financial and the administrative machinery of the Society meets with the approval of the Members. You will notice that we are on the way to initiate an all-round activity in our various departments, and the idea of popularising the scientific and the technical discourses has taken firm root.

Our publications during the year have kept to the normal and the progress made in the *Bibliotheca Indica* series, in Mahamahopadhyaya Haraprasad Shastri's Catalogue of Sanskrit MSS., and in Mr. Ivanow's Catalogue of Persian MSS., Second Volume, is creditable. The revised Library Catalogue of printed books in European languages, which has just been completed, will provide an extremely useful help for research-workers. Another useful work done is the cleaning and revarnishing of the valuable paintings in our possession. The finances of the Society show a steady progress, although our need for more funds and endowments continues as pressing as ever. For this purpose I indicated in my last year's address the lines along which the Society should proceed in order to impress upon the public mind the value of the work which the Society is doing. Popularisation of learning is no mean object and if we, at the same time, secure the practical sympathy of our rich men, we will be in a position to render more

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and more useful services to the cause of learning and enlightenment.

It is customary for the President of your Society to include in the Annual Address some remarks on a special subject. Last year I refrained from dealing with any particular topic as I desired to place before you the position of the Society including a recapitulation of its history. This year I must conform with tradition and I have selected a subject which is agitating the public mind in India at the present moment, namely, the economic condition of the people. I do not propose to tax your patience with an abstract discussion of theories and principles, but my experience as a business man, who has frequently come into contact with both the cultivators and the middle classes, emboldens me to express what I feel on this complicated subject. Another reason which weighs with me in selecting this subject is that the present economic condition of India requires immediate attention and study in order that practical steps may be devised.

The aim of an ideal economic policy should be to provide every man and woman with sufficient means of subsistence leaving a well-defined period of leisure to be devoted to things which do not directly contribute towards earning a livelihood. It is only after the physical needs of man are satisfied and secured that he can participate in the gradual, moral, political and social uplift which should characterize a progressive society. The objective of a sound economic policy should be the improvement of the material conditions of living, that is, to provide ways and means for every man to obtain a reasonable subsistence with only so much effort as will leave him ample leisure and opportunity to devote to things not directly remunerative in the shape of material comforts. The problem, therefore, is not merely to provide an abundance of material goods equitably distributed but also to provide plenty of leisure and opportunity for one and all. Economics, as you know, generally deals with the production and consumption of commodities. Almost every authoritative treatise on this vital subject deals largely with the factors of production. But these factors ignore the essential purpose of an ideal economic policy. Man has more than animal needs and to neglect these is to ignore the fundamental conception which should underlie any scheme of human betterment.

India is entering into an era of industrial development. It behoves us to profit by the experience of the West and avoid the shoals and pitfalls in which Western industrial history abounds. Let us look briefly at the "facts" about India. Of the population of India, 72 per cent. are dependent upon agriculture, directly or indirectly. The peasant forms the biggest problem of Indian economics. In formulating any scheme or plan for his general uplift, essential factors such as

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his poverty and ignorance, his material condition, his modes of living, his habits of mind in relation to his environment must be taken into consideration. We must recognise that his poverty precludes notions of thrift and that through ignorance he is at times foolishly extravagant. He does not hesitate to incur expenditure to the utmost limit of his credit on pilgrimages or on ceremonial occasions, like the marriage of his children or the funeral of his parents. He is illiterate but he is not entirely uneducated in the cultural sense. He possesses a fine comprehension of traditions and customs, his social heritage is of a distinct cultural refinement, though often obscured by gross superstition and ignorance. He is unambitious but his desires and instincts are not by any means primitive; he can and does feel intuitively, when given the opportunity, the call of culture and refinement. His knowledge is limited, but his vision, though dimmed by generations of indigence and poverty, is often directed towards far-away spiritual lights. The folk tales, symbolic of village life, carry an appeal to him as perhaps nothing else does. At times he forgets his sordid surroundings amid the splendour of spiritual dreams. Such are his social and cultural heritages and one cannot really ignore this part of his life in a scheme of reconstruction of his material conditions We have further to keep the fact constantly before the mind that the Indian ryot does not like, and probably never will like, an utterly individualistic economic structure. This notion is entirely repugnant to Indian ideas, particularly to the Hindu scheme of life. Communal living, mutual help, co-operative team-work—these habits are still at work in the simple economy of our villages.

The human aspect of the Indian peasant problem should be placed alongside the facts about the agricultural capacity of India, her productive capacity per acre, her dependence upon extra-human agencies, like the monsoon, for proper and timely harvests. We should also keep in view the simple credit system of the village—the habit of getting into the clutches of the money-lenders, of borrowing before harvesting and borrowing again to sow in the next season. Climatic factors, systems of land tenure, and conditions of labour on the fields should also be taken into consideration in drawing up any economic scheme for the peasants. Scientific research has revealed a great field for agricultural development and a prospect of much greater returns than have been obtained hitherto, but they are only partially realised and we must take concerted measures to make them common property. It is, therefore, imperative for the Imperial Government to constitute an effective central organization to achieve this result with the harmonious co-operation of all the provinces.

The introduction of factories in big towns has provided an alternative means of livelihood for the half-starving cultiva-

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tors. Migration from villages into large industrial towns has recently assumed big proportions, and in as much as the migration is seasonal, it has given rise to complications in regard to the supply of industrial labour. We realise that this migration is seasonal because of the people's deep-rooted attachment to the soil and that dire want only drives them to the towns. When the call of the harvest comes or when employment in the mills diminishes, they—one and all—tread their way back to their villages and to their little plots of land. Town and country are inter-dependent and nourish each other, the former providing manufactures and the latter food. The poverty of one necessarily brings about, in the end, the poverty of the other. The development of the manufacturing industries need not, by any means, lead to the neglect and decay of the nation's agriculture.

When we come to the middle class we find them consisting largely of *Bhadralog* who are not cultivators. Time was when they were content with a modest living, and finding literacy a good asset they flocked to Government, commercial and railway offices seeking employment as clerks. Conditions were comparatively favourable for two or three generations, but, as soon as the supply of these half-educated clerks exceeded the demand, the avenues of service became narrow and the scramble for employment reducing their hire price, the class as a whole became demoralised. Living for two or three generations in the ease of town life has weaned them of their love for the villages and at the same time has made muscular toil distasteful and even abhorrent to them. The educational opportunities so far open to them have been along one dead uniform line. Very little effort has hitherto been made to place vocational or industrial training within easy reach of the poor middle class. The multiplication of clerks, therefore, goes on apace and poverty, more severe in its incidence than in the case of the peasant, stares them in the face. We have to remember that while the peasant ekes out a precarious living by the toil of his muscles, he remains physically fit and can turn his hand to other unskilled heavy work. For the average clerk out of employment there is no alternative and he cannot turn easily to any other occupation. This is the problem of the poor *Bhadralog*. To be able to help him, to solve the riddle of poverty, we need to assess not merely the amount of employment available for men of his class, but also to understand his psychological equipment, his modes of thinking, his aversion to physical labour. These facts should be considered in relation to the opportunities open to him. In my opinion, gradual reform in his outlook can be achieved only by altering the educational schemes of training and by widening the opportunities within his reach.

It may be considered in this connection, how far the

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industrial resources of the country have been exploited. The Industrial Commission of 1916-17 opened the eyes of many people in regard to the material resources of India. It is only now being recognised that the country possesses enormous potential wealth which needs to be systematically exploited. The annual reports of the Geological Survey of India furnish an illuminating commentary upon the manner and the extent the mineral resources of India are being utilised. The provincial reports of the Industries Departments indicate the lines of immediate improvements. Despite various efforts it still remains true that the possibilities of India as an industrial nation have not yet been carefully computed for want of accurate data. Jute, tea, cotton, as well as coal, gold and manganese are industries which are fairly well established, but evidently there is scope and possibility for many more. The question of industrial labour has been briefly touched upon by me in relation to agricultural migrations, but as the labour problem is getting acute, particularly on the Bombay side, careful investigations should be made in regard to the supply of labour. With industrialisation come the complications of the factory system We need to know how far India can be spared the evils of the system which are so evident in certain western countries. Credit, industrial capital, wages, prices, and currency are other allied problems which have a close bearing on the question. On the other side, we need carefully to consider the relations between capital and labour, the workmen's welfare schemes, the inherited soil traditions of the labourers, and their meagre educational equipment. The statistics of social and economic facts furnish us with a true guide for the purpose of devising our methods of approach towards the goal

I feel some diffidence in expressing any definite views upon the remedies to be adopted for the distressing conditions of the masses of India. A few points stand out prominently and to my mind these indicate the general lines along which reforms may, with advantage, be initiated. Education is, I believe, the crux of all the problems of India. What has struck me most forcibly is the progressive impoverishment of our rural areas and a gradual increase in the cost of living. I have already commented upon the material and the psychological make-up of the rural classes. Poverty and destitution has overtaken them in their struggle for bare sustenance, and ignorance, from want of education, prevents them from struggling out of their present deplorable plight. To remove this ignorance, to bring light and understanding to each one of the homes in the villages, to teach them the folly of imprudence, and inform them of the viciousness of the money-lender's grip—these are the immediate objects which should engage the attention of our administrators. Universal primary education of the right type for the masses is the chief desideratum to-day in India. Any

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education that is to attract the mass of the people must have a direct and evident bearing upon the activities of their adult life. Agriculture is the fundamental, if not the most important, industry of any people. In agriculture, by far our greatest industry, progress cannot be achieved until the peasants are enlightened and begin to realise the benefits of systematic production, mutual self-help, and scientific cultivation. They will not do so unless we spread throughout the length and breadth of the country the desire for education and provide ample facilities for meeting it. Knowledge will cleanse the ryot of his pernicious habits. It will clear his befogged mind of evil superstitions. He will then be able to think for himself and his future. He will be able to understand and to take full advantage of the co-operative societies and thus avoid resorting to the money-lenders. I may here sound a note of warning in regard to the measures adopted by the Government for the spread of co-operative methods. The key to success of the co-operative movement lies in creating in the people themselves a desire to render mutual help, to adopt the habit of team-work, and to appreciate the benefits of joint labour. It should be a movement from below if it is to rest upon secure foundations. In India from the very nature of the rural problem it is possibly difficult to stimulate the rural mind and the movement has to originate from above. But in actual administration, the true principles of co-operation should not be lost sight of. A Registrar of Co-operative Societies should be a guide and a friend of the cultivators and not a haughty bureaucrat installed in a lofty position, isolated and out of touch with the feelings of the villagers. I feel that considerable improvement could be made in the present administration of this department.

Free education of the proper kind once brought to the home of every ryot will, I venture to say, solve most of the economic difficulties of our masses. What actually happens may be illustrated by a reference to any of our village schools to-day. Sons of a few prosperous cultivators are sent for schooling; their education consists of an unintelligent cram of subjects which have no visual meaning in their limited sphere of living. The result is that the young son acquires a distaste for hard manual work and looks longingly towards the city where he can, according to his own understanding, obtain lucrative employment as a clerk and so join the *Bhadralog class*. The result is that the rural areas are deserted by the more promising and the more capable of the younger generation. This is done in ignorance of the deterioration they are bringing upon their ancestral occupation; they are equally ignorant of the adverse conditions of living in the city, which become more and more acute by continued immigrations. The first lesson we should learn from such a state of affairs is that rural educational areas should specialise in imparting agricultural education

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alone. I have great regard for literary and cultural education, without which a country cannot attain to the highest pinnacle of civilisation either politically or socially. A good higher education is, therefore, imperative for a nation. But it must be remembered that the peculiar condition of the masses needs a different treatment. What we require is a systematic attempt in our villages to teach the peasants' sons the craft of their fathers in the light of modern scientific advances. A village school curriculum should also include elementary lessons in chemistry, botany and physiology, with practical training in carpentry, blacksmith's work, and manuring. The boys should also be taught general principles of soil treatment, irrigation, the care of live stock, the careful selection of seeds, and the benefits of crop-rotation. Such knowledge and training in the schools should be supplemented by a short course of demonstrations on model farms attached to a group of village schools. During vacations the boys will go back to their homes with their minds full of agricultural "talk" and exert a cumulative, beneficent influence on the actual practice of agriculture in the villages. It will be admitted that the agricultural possibilities in India are boundless. What we need is to create in the people an enthusiasm for the improvement of cultivation and for the science of agriculture. The great treasure of India lies on the surface, in our uncultivated and in our under-cultivated land. By a network of useful agricultural schools we may impart to the young sons of the peasant mental alertness and enthusiasm for improvement of agricultural conditions. Education, after all, should prepare boys generally for a more useful and progressive career than what their parents had. The primary object of education is to fit boys for usefulness in their future stations by preparing them for the battle of life. It can really be useful for future careers and will attract the masses when it has a direct and evident contact with the surrounding activities. The solution of the agricultural problem of India lies, therefore, in free and universal agricultural education of the right type. It may be a *long* method but I consider that it is the only practical method if we wish to ameliorate the present deplorable conditions.

The problem of the middle classes is in a way more difficult, as the openings in life for them are at present limited. The line of advancement for them is the opening up of other occupations. In this connection, the proper relief is a drastic change in the system of education at present provided in the cities. Mere literary or the so-called liberal education is of no use to the majority of people in so far as training for a particular vocation is concerned. What is required is technical education, or to be more exact, vocational training. The aim should be to teach to work conscientiously and to love work, and education should prepare boys for the future task. With the

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inception and growth of various industries in the country a large number of skilled workers will be required and it is the middle classes which can provide this labour. It is a welcome and healthy sign that our educational authorities are directing their attention to improving and recasting the syllabus of the primary schools in such a way as to prepare the ground for the introduction of boys to vocational training after they have mastered the rudiments of reading, writing, and arithmetic. It is pleasing to note in this connection that the Government of Bengal has, in a recent letter addressed to the Associated Chambers of Commerce, declared its intention to introduce in certain selected primary schools a finishing course in technical or vocational training on the lines advocated by Mr. Biss in his well-known Report on Primary Education (1921). It is proposed to add a two years' course at the end of the Upper Primary School stage and training would be given for those occupations, or preparatory to those occupations, for which there is scope and demand in the locality. The active co-operation of local bodies is invited and I hope it will be forthcoming in good measure.

I admit there are vast difficulties and complications as soon as we begin to look into the details of such a scheme of education for a particular area. Training in a particular profession will be fruitless unless there is scope for the utilisation of trained men. It seems to be necessary, therefore, that other spheres of work than mere clerkships should be opened to the sons of our middle classes. It might also be said with justice that the absence of trained technical skill is an impediment in the way of industrial progress. The problem is, therefore, two-sided: supply of skilled men is necessary for industrial development, at the same time industries should offer more opportunities for the utilisation of such supply as is forthcoming. Practical administrators and educationalists recognise that with a gradual alignment of the educational policy in the proper direction much can be achieved. What is needed, in my opinion, is a recognition of the present facts about the middle classes: their narrow outlook, their aversion to manual labour, their systems of caste regulations and superstitions, their low powers of resistance, etc. The wise policy is to bring enlightenment to their limited visions and, at the same time, stimulate their ambition to grow out of their environments. Opportunities and facilities for entrance into other careers than mere clerkships are, therefore, urgently needed.

The extreme poverty and ignorance of the people of India has more or less forced very large duties on the State (*i.e.*, the Government of the country). The general trend of history and the need of the times have forced the Central and Provincial Governments to approve the principle of State help to industries. The State must harmonise and direct all

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the economic energies of the people. Personally, I welcome the increasing interest and sympathy which the Government is showing in regenerating Indian economic conditions. H.E. the Viceroy, in a notable survey of Indian politics made in his speech on the 20th August, 1925, after his return from England, fore shadowed a more vigorous agricultural policy. He laid stress on the present disjointed activities and declared it to be the determined policy of his Government that agriculture should receive more concentrated and centralised attention. This is all to the good and I doubt not that the Provincial Governments will co-operate heartily in a scheme for co-ordinating agricultural progress. A sympathetic ruler can also wisely initiate many industries with benefit to the entire people. The State departments are the repositories of miscellaneous information and it rests with the able officers of the State to sift this information, make known the results of their careful investigations and show that industrial risks may reasonably be undertaken.[1]

The Government of India is possibly the greatest Socialist State in the world in the healthier sense of the term. For the most part, the State owns the land and draws its revenue in the form of land tax and water tax direct from the cultivator; performing the functions of a landlord, the State will at times of famine or scarcity remit these taxes or make advances for the coming season. The State constructs, owns and operates vast systems of railways and irrigation canals with the allied concerns, such as collieries and workshops comparable in size with any in the country. The forests of India are owned and worked by the State. All this denotes a vast corporation with multifarious duties of construction and operation and of buying and selling. The State's business operations are often in direct conflict with private enterprise while the resources and technical skill at its call are much greater. It is not unnatural, therefore, that all classes have come to look to the Government for a lead. The ryots, when in trouble, expect the Government's paternal help and the industrialist looks to Government to shoulder the risk in any new industrial adventure. To such an extent has State enterprise grown that many thoughtful persons see in it a danger to the nation, a danger of killing private enterprise and adventure, of sapping individuality and character. The State as such and in its proper function can render invaluable aid to the industrialist. While recognising that self-help and self-

[1] Since the above was in print, I have read with great pleasure the speech made on 20th January '26 by H.E. the Viceroy in opening the Winter Session of the Legislative Assembly at Delhi His Excellency's references to the need for agricultural improvements deserve close attention and I have no doubt that the announcement of a Royal Commission to examine and report on the present conditions of agriculture and rural economy will be universally welcomed.

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reliance is the primary virtue needed for human progress, the Government can not only view the desire for economic betterment sympathetically but can take active steps to establish a policy which will allow this desire to fructify and thus materially assist in improving the general conditions.

Economic surveys, education, co-operative system, industrial stimulus, agricultural research, demonstration and propaganda, and a host of similar activities fall within the ambit of State services, but these activities should stop short of entering into direct competition with or displacing private enterprise. Our Government is becoming alert and wide-awake and I fully hope that with the hearty co-operation of the people the Government can and will achieve a measure of success which will hasten the progress towards the economic ideal.

Gentlemen, such are the conditions in India to-day and if you accept this sketch as accurate in its broad outlines you will naturally ask whether adequate measures have been taken to bring about a general rise in the standard of living of the cultivating classes. The problems I have raised have engaged the attention of Government throughout the twentieth century. Departments of Co-operative Credit, of Agriculture, and of Industries have been established and are actively engaged in co-operation with the Education Department in seeking solutions to the many problems which must arise in dealing with so vast a business as the progressive development of nearly 300 million people. Obviously it is utterly beyond the limits of this address to review even in the most cursory way the work that has been done in this direction by many able men in the last 25 years. India is undoubtedly tending to become industrialized, the yield of its soil is increasing, great additions have been made to its wealth, and its status in the comity of nations has risen in a very remarkable degree. All this may be conceded and it may yet be that the condition of the people of India has not made satisfactory progress and that for all practical purposes, nearly 70 years after the administration of the country was directly assumed by the British Government, the main achievement that clearly stands out is an addition of about 100 millions to the number of the inhabitants. What this connotes I need not now discuss. What we want in the future is an improvement in the quality and not an increase in the quantity. The distinctive feature of modern civilisation all over the world, as compared with the ancient forms which have passed away except in the East, is the large amount of leisure enjoyed by all classes consequent upon the universal employment of labour-saving machinery in all departments of material activity. Although, no doubt, the cultivator in India, speaking generally, remains idle for months at a stretch, this is so for want of an alternative occupation;

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and conditions are rapidly changing in this direction also. Here we see that in this direction India has made comparatively little progress and here we have clearly indicated a field in which it is evident that action should be taken. We all know that the country is called upon to support enormous numbers of totally useless or at best very inferior cattle, that the inferior husbandry is partly due to the necessity of growing food stuffs for a disproportionate number of cattle compared to the area of land cultivated. Equally we are aware that the tools and appliances of the ryots, whilst simple, ingenious and adapted to the needs of a primitive community, are from a modern point of view comparatively inefficient. It is difficult to remedy matters because of the poverty of the people and the smallness of their holdings. This is the opportunity for the co-operator. In every province of India, useful innovations have been introduced on what may be termed an experimental scale but it yet remains to be determined whether the success is due to transient causes, such as temporarily favourable conditions or the personality of the individuals responsible for the new ideas. Special mention should certainly be made of the scientific results obtained in the Agricultural Research Institutes and attention should now be given to devising suitable means, whereby they may be brought to the knowledge of the cultivators, to induce these men to try them under the normal conditions of rural life. Here is a call for administrative skill of the highest order as the goal to be attained is the winning of the confidence of millions of practical men, conservative by instinct, who, from past experience, have a rooted distrust of innovations brought to their notice by outsiders whom they rightly consider imperfectly acquainted with their local and domestic environment.

Gentlemen, I have concluded my short survey of the economic condition of our people. I am painfully sensible that I have not said anything new but the subject I have dealt with is of vital importance to the welfare of India and I am emboldened to think that a statement of the conclusions I have arrived at after fifty years of fairly close contact with all sorts and conditions of people in India may not be without some value as a contribution to the general discussion which is now in progress.

Gentlemen, I crave your indulgence for ending this address on a personal note. You entrusted me with your confidence for two successive years and placed me in a position of high honour and great responsibilities. I thank you sincerely for this great privilege of being the President of your Society. In the discharge of my duties I have conscientiously striven to promote the interests and welfare of the Society. I mention this in order to express my personal obligations to the Members of the Council, the Secretaries and the Treasurer, who have

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ungrudgingly given me their support and sympathy. The staff has worked admirably and I bring their meritorious work to your attention. They have co-operated whole-heartedly in effecting improvements in the machinery of administration and management. For the General Secretary, Mr. Johan van Manen, I feel I do not possess adequate words to express my sense of deep obligation. He has laboured unstintedly in the service of the Society which he so dearly loves; and if you notice any improvement in the discharge of the functions of the Society and in the further advancement of our ideals it is entirely due to the devotion, the enthusiasm and the ungrudging toil willingly rendered by the General Secretary. Any learned society would be proud to have Mr. van Manen as its administrator and I consider that the Asiatic Society of Bengal is fortunate in possessing a man of his scholarly attainments and ideals as a Secretary, particularly at the present stage of reconstruction. On behalf of the Society, as well as in my personal capacity, I thank Mr. van Manen for his most meritorious services during his tenure of office. I have no doubt that the Society would like to show its appreciation of his work in some more tangible manner.

I shall presently vacate this chair in favour of Mr. G. H. Tipper who has been a member of the Society for over 21 years. During this period he served on the Council for many years, was General Secretary for about five years, and Library Secretary last year. In 1915, the Society, in recognition of his valuable research work, elected him as a Fellow. For many years he has been recognised as one of the leading Geologists of India. Mr. Tipper's activity in the vast range covered by geological science is immense, from important palæontological memoirs to the most abstruse researches in the mineralogy of the "rare elements," or the accurate cataloguing of rock system classifications. In the discovery of the minerals containing the "rare elements" in India, Mr. Tipper has been the chief pioneer, and his study of their distribution in this country has been one of his greatest achievements. Immense areas in Persia, Baluchistan, Madras, Burma and Chitral have been geologically surveyed by Mr. Tipper to whom we also owe a monograph on the geology of the Andaman and Nicobar Archipelagoes. In electing Mr. Tipper to the office of the President, you will be honouring a great scientist and a distinguished scholar. I hope that he will receive from you the same measure of confidence and trust which it has been my good fortune to receive.

I thank you again, Gentlemen, for the honour you did me last year in re-electing me to this noble position. I have striven to do my duty, according to my light, in the hope that the Asiatic Society of Bengal should again occupy its privileged position as the premier learned society in the world.

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PATRON'S ADDRESS.

SPEECH BY HIS EXCELLENCY LORD LYTTON, GOVERNOR OF BENGAL, AT THE ANNUAL MEETING ON 1ST FEBRUARY, 1926.

MR. TIPPER, LADIES AND GENTLEMEN,

This is the third Annual Meeting of the Asiatic Society at which I have had the privilege of being present, and it has been my pleasant task on each occasion to congratulate the Society upon ever-increasing indications of its prosperity and success. On the first occasion the late Dr. Annandale, who was the retiring President, although he was obliged to record the fact that the membership for the year which he was then reviewing had touched the lowest figure for 20 years, was nevertheless able to point in his address to hopeful indications of a coming revival, and I think we all felt at the time that that year marked a distinct turning point in the history of the Society. Our confidence has, I am glad to say, been justified by the results of the last two years. The improvements on the material side of the Society which had been undertaken in the year 1923 paved the way for the expansion and advance which have since taken place, and at this annual stock-taking we are able to say that the period of depression has definitely passed and we are now witnessing not merely a revival, but almost a boom in the Society's prosperity. The membership has increased by 50 since last year and is now 120 more than two years ago. The present total has rarely been exceeded during the last 25 years. This we owe, I think, mainly to the work of two men—the President and the Secretary. Both have brought to the task in their different ways just the qualities that were required. The man of business and the scholar working together with zeal and energy have brought the Society to the very satisfactory position which it occupies to-day. Between them they have raised the Society from the lowest to almost the highest point in its prosperity, and we owe them a very great debt of gratitude.

I pointed out last year that 1924 had been a period of consolidation, of solid unostentatious work, which, though producing, perhaps, no specially brilliant achievements, laid the foundation on which such achievements might subsequently rise, and now during the year 1925 the structure has already begun to grow.

It is, perhaps, the basic function of such a Society as this to make the vast amount of its manuscript treasures available for scholars to work upon as the foundation of their original

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research. The advance made in this direction is, therefore, a fair measure of the vitality of the Society and the value of its work. The latest report of the Society records satisfactory progress of this kind both with the *Bibliotheca Indica* and in the preparation and publication of the Catalogues of Sanskrit, Persian, Arabic and Tibetan manuscripts. Another great asset is the completion of the two Catalogues, which will between them enable the book trade, buyers and research workers to have full details of the resources of the library. Work of this kind is not interesting to the general public, but we must not on that account overlook the tremendous amount of labour and money which it involves, and those who have devoted themselves to this unostentatious task will derive their reward from the gratitude of the scholars who will benefit thereby. This is the solid work of the Society and it paves the way for the masterpieces of original research which make the Society famous in the outside world of learning. This year two such masterpieces have been added to the record of the Asiatic Society—Major Sewell's monographs on "Geographic and Oceanographic Research in Indian Waters" and Mr. Bodding's "Studies in Santal Medicine and Connected Folklore." Each of these represents the observations of a life-time and embodies the results of systematic research extending over many years.

These activities are the work of specialists, but they are made possible only by the co-operation of the great body of the intellectually minded. Nor is the work of the Society to be measured only by the output of its scholarly papers as is shown by that passage in the report which refers to the number of appeals for help and information which it has received from outside.

It has sometimes been made a reproach to this great city that nothing but the frivolous appeals to its citizens. The existence and the increasing prosperity of this Society are a sufficient refutation of the charge. Every inhabitant of Calcutta—indeed of India—may justly be proud of the record of this old Institution, of its activities and of the reputation which it enjoys throughout the world.

I noted with some surprise a passage in the report which states that a great deal of the current income is eaten up on the upkeep and administration of the existing collection, leaving little for new acquisitions. The ideal, of course, would be for each year's additions to be fully endowed, leaving it to successive generations to find and endow fresh acquisitions. The relation between the permanent endowment fund of the Society and the value of its possessions is disproportionate. An urgent need is the increase of the endowment fund so as to set free current income for expenditure on current activities rather than on mere upkeep. and standing charges—and I would urge would-be benefactors of the Society to emulate the example of

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Dr. Annandale and Mr. Dods either by adding to this endowment fund or by giving donations for specific purposes.

Evidence of the reputation which the Society enjoys outside India was afforded to me last autumn by the fact that almost the first request which His Majesty the King of the Belgians made to me when he arrived in Calcutta, was that I should arrange a visit to the Society's buildings and those who were present will bear witness to the lively interest which His Majesty showed in the treasures which you possess.

This year the retiring President has reverted to the old custom of selecting a special subject for his address and we have two reasons to be glad of his decision. The first is the evidence which this decision affords that the affairs of the Society are sufficiently healthy not to require his attention on this day—and no better proof could be afforded of the satisfactory progress to which I have alluded. The second is the extremely interesting, thoughtful and helpful address to which we have just listened. Sir Rajendra has chosen a subject of vital interest to the well-being of his country, and he has treated it in a manner which well sustains his reputation for sound practical commonsense.

Coming from one who has had such unique opportunities of studying the question, his words must command the deep attention of all who will read them. They will require detailed study and careful thought. In general, I find myself in complete agreement with his presentation of the problem and with his suggestions for its solution. His remarks about the traditions and cultural refinement of the peasant—and of the general outlook of this class which so greatly predominates in the population of Bengal—quite rightly concentrates our attention on the human aspect of the problem which is often apt to be overlooked and his analysis of the causes of the present state of affairs leads on naturally to the solutions which he has to offer.

That we are on the threshold of a great industrial development in India there can be no doubt. India is being driven in that direction both by demands from without and by economic pressure from within and it behoves those who, like Sir Rajendra, foresee what is coming to make wise provision in advance. The countries of the West that have become industrialized are for the most part examples to be avoided and India will lose far more than she can gain if, in the pursuit of material wealth, she fails to preserve her native characteristic culture and the more mystical and unselfish part of the religion of her people—what Sir Rajendra has called "the splendour of spiritual dreams." The translation of the agricultural and village life of the Indian peasant into the industrial life of the English or American artisan would be a deterioration—not a gain. What is needed is the elevation and training of a

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peasantry whose primary business will always be the cultivation of the land which he occupies and loves rather than the depopulation of rural areas by migration into congested towns. If this end is kept in view there are many routes by which it can be approached. The first is to eradicate the epidemic disease which saps the strength and energy of the cultivator, the second is to improve the yield of the soil which he cultivates by the substitution of scientific for primitive methods of cultivation, the third is to train his intellect so that he may reap the most profit from his labour and the most enjoyment from his leisure, the fourth is to save him from dependence on the money-lender by teaching him the principles of co-operation, the fifth is to introduce village industries by which he may supplement his income from the soil. Sir Rajendra Nath has rightly pointed out that all these avenues of progress must be fully utilized if the life of the Indian peasant is to be made less precarious and new sources of wealth brought within his reach. Departments of Government exist for all these purposes—they are all subject to popular control and the only thing required is for them to be utilized by men of vision, men of energy, men of unselfish aims. The machinery is there, but it is not yet fully used.

No political party in Bengal has yet come forward with the object of utilizing this machinery of Government for the benefit of the rural population. The fact is, as Sir Rajendra Nath has pointed out, the *bhadralog* is engaged in too serious a struggle for its own existence to be able to devote its attention to the needs of others, and the employment of this class is at the moment the more pressing problem. There are two conditions of society in which the needs of the poorest are attended to. The first is when the rich are sufficiently numerous and sufficiently benevolent to attend to them out of charity, and the second is when the poorest are just rich enough to pay others to attend to them as a matter of business. India is at present passing from the first to the second stage. Such a transition stage is necessarily accompanied by much unrest, much distress, much strife and controversy, but these must be borne like the birth pains that accompany the coming of new life. They should not deter us from perseverance towards the better future which they foretell. The spread of education will lead to ever-increasing demands from the people whose standard of comfort is raised thereby. The development of industry will produce new wealth with which these demands may be met. The extension of the franchise will lead to more attention to the needs of the new voters, and so in India, as everywhere else in the world, economics will produce problems and politics must solve them.

In conclusion, I should like to express to Sir Rajendra Nath Mookerjee the cordial thanks of all the members of this Society

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for the services he has rendered to it as President. Sir Rajendra, we know, is always in request—no Committee or Commission can do without him. The Government of India make even greater demands on him than the Government of Bengal, and he is a living example of the fact that the busiest man has time for everything. That he should have consented to serve as our President not once merely, but for two years in succession was in itself a great service, but he was not merely a figurehead. He devoted himself heart and soul to the re-organization of the Society. He worked hard on its behalf, and it is to his devotion and self-sacrifice that the Society owes its present prosperous condition. On behalf of the Society I thank him for his great services, and I wish his successor equal success in the year which now opens. From the reputation which Mr. Tipper enjoys in the world of scholarship and science, I think we need have no apprehensions on this score.

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Officers and Members of Council

of the Asiatic Society of Bengal for 1926, as elected and announced in the Annual Meeting, February 1st, 1926.

President.

G. H. Tipper, Esq., M.A., F.G.S., M.Inst.M.M., F.A.S.B.

Vice-Presidents.

Sir R. N. Mookerjee, K.C.I.E., K.C.V.O.
Sir Devaprasad Sarbadhikari, Kt., M.A.
Rai Upendra Nath Brahmachari, Bahadur, M.D., M.A., Ph.D., F.A.S.B.
Major H. W. Acton, M.R.C.S., L.R.C.P., I.M.S.

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Treasurer :—Sunder Lal Hora, Esq., D.Sc.
Philological Secretary :—Mahamahopadhyaya Haraprasad Shastri, C.I E., M.A., F.A.S.B.
Joint Philological Secretary :—Shamsu'l 'Ulamā Mawlawī Hidayat Hosain, Khan Bahadur, Ph.D., F.A.S.B.
Natural History Secretaries.
- Biology :—Major R. B. S. Sewell, M.A., M.R.C.S., L.R.C.P., F.A.S.B., F.L.S., F.Z.S., I.M.S.
- Physical Science :—C. V. Raman, Esq., M A., D.Sc., F.R.S., F.A.S.B.

Anthropological Secretary :—H. E. Stapleton, Esq., B.A., B.Sc.
Medical Secretary :—Major R. Knowles, I.M.S.
Library Secretary :—Lt.-Col. N. F. Barwell.

Other Members of Council.

The Hon'ble Mr. Justice C. C. Ghose, Kt., Barrister-at-Law.
Percy Brown, Esq., A.R.C.A.
B. L. Mitter, Esq., M.A., B L., Barrister-at-Law.
Suniti Kumar Chatterji, Esq., M.A., D. Lit.
P. C. Mahalanobis, Esq., M.A., B Sc.
Pramatha Nath Banerjee, Esq., M.A., B.L.

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LIST OF EXHIBITS SHOWN AFTER THE ANNUAL MEETING OF THE ASIATIC SOCIETY OF BENGAL, ON THE 1ST FEBRUARY, 1926.

1. Exhibited by Sir Rajendra Nath Mookerjee.

Four samples of modern Indian craft work.

(1) Silversmith's work. Group from the Ramayana.
(2) Beaten metal table.
(3) Enamel flower pots.
(4) Tibetan box, sheathed with white metal respoussé.

2. Exhibited by Mr. G. H. Tipper.

Three photographs of Chitral.

(1) Reflection in a glacial lake.
(2) A typical valley.
(3) Snows from the village of Reshun.

3. Exhibited by the Geological Survey of India.

(1) *A Fossil Egg from the "Red Bed" of the Younanyyaung oil field.*

(2) *Specimens of Lapis Lazuli from Badakhshan.*

(3) *An iron meteorite which fell at Samelia, in the Shahpura Chiefship of Rajputana.*

(4) *A specimen of salt containing an inclusion of water, from Warcha, Shahpur, Punjab.*

4. Exhibited by Mr. J. A. Chapman.

Selection of manuscripts and books of interest.

(1) Bolaqi Das's Muraqqa-i-Jahan Numa, containing portraits of all the Mughal Emperors down to Bahadur Shah.

(2) Khamsa-i-Nizami. A very interesting and valuable copy of the five poems of Nizami. The book contains some full page miniatures in the best Persian style. Written in the 16th century.

(3) Deed of a widow who sold herself during the great famine of Bengal, 1770.

(4) Autograph letter of Maharaja Nanda Kumar, dated 25th Magh. (Year not stated.)

(5) Hobbes (Thomas). Leviathan, or the matter, forme, and power of a Commonwealth, ecclesiastical and civil. *London*, 1651. (1st edition.)

(5–8: Zoological Survey in India.)

5. Exhibited by Major R. B. Seymour Sewell.

Three ancient skulls.

The three skulls exhibited belong to three different races that inhabited India and Asia in very early times. The first skull

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"A" is a typical example of the inhabitants of Southern India in the late Copper or early Iron-age, probably about 2500 B.C. This primitive race, whose physical characters place it in the type known as "Proto-Australoid Proto-Negroid," was one of the remnants of the earliest known inhabitants of Asia; originally occupying the greater part of Central and Western Asia, they were pushed towards the south and south-east by the invasion from the north and north-west of the Mediterranean and Caspian races, and this particular remnant finally established itself in South India where it built up a centre of civilization in and around Tinnevelly. This skull is one of the series that were excavated at Aditanallur. The chief characters of the skull are its moderate length, the medium height of the vault as measured above the external auditary meatus (auricular height) and a broad nose.

The second skull "B" was excavated at Nal in Baluchistan by the Archæological Survey of India. The race, of which the skull is a typical example, is the Caspian race that originally arose in the steppe region of Eastern Russia and Western Siberia and as a result of its migration in a south-easterly direction helped to push the "Proto-Australoid Proto-Negroid" stock towards the south. The age of the skull is probably about 3000 B.C. The chief characters of the skull of the Caspian race are its extreme length, the great height of the vault above the external auditary meatus and the narrowness of the nose.

The third skull "C" was obtained from the alluvial deposit in the bed of the Ganges at Bayana and is typical of the Mediterranean race. This race arose in and round the shores of the east part of the Mediterranean and migrated towards the east and south-east. It was this race that evolved the type of civilization that reached its highest stages among the predynastic Egyptians and in the kingdoms of Sumeria and Akkad and that spread even further eastward into Turkestan and possibly as far as Western China. The chief characters of this race are the possession of a moderately long skull with a moderately high vault, very similar to skull "A," but with a narrow nose.

It is from these three primitive races that the diverse tribes and races of India derive their origin. The blending of the Caspian and Mediterranean races produced the types so characteristic of the N.-W. Frontier of India and the Punjab at the present day and the "Proto-Australoid Proto-Negroid" race was the basis out of which the aboriginal tribes of Southern India sprang.

6. Exhibited by Mr. B. N. Chopra.

Macroscopic Fauna of the Calcutta Filtered water supply.

Leaving out of consideration small organisms, such as minute crustacea, insects or insect larvæ, etc., the following animals have been obtained during the last five years from the filtered water reservoirs or mains of Calcutta, or, more often, from taps, and have been sent to the Zoological Survey of India for identification.

(*a*) Animals that have probably made their way into the taps from outside :—

Snake. *Typhlops braminus.*
Centipede. *Scolopendra* sp.

(*b*) Animals living in the pipe system :—

Eel. *Anguilla anguilla.*
Shrimp. *Caridina* sp.
Crab. *Ptychognathus dentata.*

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Earthworms. *Pheretima heterochaeta.*
Limnodrilus socialis.
Perionyx excavatus.

7. Exhibited by Mr. H. Srinivasa Rao.

Egg-cases of Mollusca.

The curious clusters of capsules exhibited represent the egg-cases of various marine mollusca. Reproduction in the mollusca invariably takes place by means of eggs, which are produced by the female and fertilised by the male. As a rule, the eggs, after fertilization, are laid and undergo their subsequent development apart from the parent. As a protection against enemies, adverse environment, etc., the progeny of the mollusca are carefully encased in tough leathery or bladder-like capsules, the substance of which is secreted by the female parent. The egg-cases are attached to sea-weeds, to their own shells, to those of other animals, or to rocks, etc. The shape and arrangement of the capsules vary with the genus, or sometimes with the species.

8. Exhibited by Dr. Sunder Lal Hora.

Balwantia soleniformis (Benson), and its burrows.

This interesting bivalve lives in burrows excavated in either hard blue clay or friable sandstone. It lies in a burrow firmly anchored by its well-developed and muscular foot at the anterior end and is able to enlarge it by a to and fro movement caused by the expansion and contraction of the foot. The coarse longitudinal ridges on the shell and its sharp margin help in the process of excavation. It seems probable that the animal is unable to start a fresh burrow but enlarges those already present according to its requirements.

The Uriya coolies in the Surma Valley consider the animals of this species as a great delicacy and have devised a simple instrument for dislodging them from their burrows.

9. Exhibited by Mr. Satya Churn Law.

Photographs of nests, eggs or young of some resident but unfamiliar birds of the district of 24 Pergannas.

(1) Nest with one egg only, highly incubated, of *Zosterops p. palpebrosa* (Indian White-eye), local name *Babunā*; slung after the fashion of a hammock and wedged into the fork of a mango branch. Photographed *in situ*, April 22, 1925.

(2) Nest with three eggs of *Rhipidura a. albicollis* (White-throated Fantail Fly-Catcher), local name *Chāk-dayal;* the suspensory supports are in this case two leafless creeper stems which cross each other; the tail of fibres dangling from the foundation of the nest is a characteristic feature. Photo taken, July 20, 1924.

(3) Typical nest of *Terpsephone p. paradisi* (Indian Paradise Fly-Catcher) fixed to a thin bamboo branch at a point where some shoots spring up, the latter being incorporated into the sides of the structure.

(4) Nest with one fledgeling of *Ægithina t. tiphia* (Common Iora), local name *Chātak, Fatikjal*; photographed *in situ*, May 11, 1924.

(5) (*a*) and (*b*)—Two photographs of typical nests of *Prinia i inornata* (Indian Wren-Warbler) in two different situations,

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not very far from each other,—one amongst *mela* reeds on the bank of a shallow pool of water and the other in an *okra* shrub beside flooded paddy land; taken June 14, 1925. In (*a*) the structure is long and purse-like, attached above and all round to the surrounding reed-stems with a small entrance near the top. In (*b*) the nest is hung between twigs; it is nearly globular with the entrance hole near the top.

(6) Tubular nest of *Cisticola c. cursitans* (Rufous Fantail Warbler), local name *Ghās pitpiti*, in a clump of grass; photographed June 14, 1925. The chief cementing material in this case is cob-webs which shine besprinkled with morning dew and are responsible for the high lights.

(7) (*a*) Nest and egg of *Anthus richardi rufulus* (Indian Pipit) on the ground beneath a tuft of grass beside paddy land; taken June 13, 1925.

(*b*) Young of *Anthus richardi rufulus*.

(8) Young of *Butorides striatus javanicus* (Indian Little Green Heron), local name *Kurro Bak*, photographed on tamarind branch, April 26, 1925.

(9) Nest with three eggs of *Tephrodornis pondicerianus* (Common Wood Shrike), photographed May 10, 1925.

(10) Nest and two eggs of *Pericrocotus p. perigrinus* (Small Minivet), local name *Sāt sakhi*—on a high mango branch.

10. Exhibited by Dr. U. N. Brahmachari and Mr. S. C. Brahmachari.

Two prehistoric neolithic stone implements found in a tank in Jamalpur (Monghyr).

These two celts were discovered when a tank was being dug in "Nilmony Villa," residential house of the late Dr. Nilmony Brahmachari, Jamalpur (Monghyr), near the hillside.

Specimen No. I.—Found 10 feet below ground level. Unpolished neolithic celt with sharp round cutting edge, both sides of edge ground polished up to 1″. Prominent ridge on unpolished portion on one side only. On the reverse long irregular lines, probably due to hammering.

Specimen No. II.—Found 15 feet below ground level. Unfinished celt; cutting edge slightly curved: one side hammered into shape; reverse mostly unfinished; with groove for hafting; undressed at the top.

An interesting feature with regard to the second specimen is that there are small patches of *kankar* (calcium carbonate) deposited on its surface since the object was fashioned and which certainly indicate considerable antiquity.

Both implements are made from the same rock.

11. Exhibited by Mr. A. F. M. Abdul Ali.

(1) *Historical Documents connected with the Asiatic Society of Bengal.*

(1) Letter from the Asiatic Society, acquainting the Board with the institution of that society and the object which it had in view, and soliciting their patronage. (Calcutta, 22nd Jan., 1784.)

(O.C. 20 February, 1784, No. 90.)

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REFRENCE BOOK

(2) Draft of a letter to the Asiatic Society, intimating the Board's cordial approval of the Society and their readiness to become patrons. (20th February, 1784.)

(O.C. 20 February, 1784, No. 91.)

(3) Letter from Mr. C. E. Carrington, Secretary to the Asiatic Society, to Mr. G. H. Barlow, Secretary, requesting that a plot of ground be granted for the erection of a house to hold the meetings of the Society and for the establishment of a library and a museum. (Calcutta, 26th December, 1797.)

(O.C. 16 January, 1798, No. 16.)

(4) Letter from Mr. E. Tiretta, Civil Architect, to Mr. D. Campbell, Sub-Secretary, reporting that there is no other plot of land belonging to the Company, except that on which the Old Court House stands, which can be granted to the Asiatic Society. (Calcutta, 19th February, 1798.)

(O.C. 20 February, 1798, No. 13.)

(5) Letter from Major-General W. Popham to the Governor-General transmitting lists of manuscript books selected from Tipu Sultan's library for the Court of Directors and the Asiatic Society. (Fort William, 20th August, 1800.)

(O.C. 11 September, 1800, No. 47.)

(6) Copy of a letter from Mr. G. H. Barlow, Chief Secretary, to Major-General W. Popham, stating that the Governor-General desires that the books selected from the library of Tipu Sultan for the Court of Directors be deposited in the library of the College at Fort William and not sent to England, and that the remainder of the library intended for Fort St. George and Bombay be also lodged in the Fort William College Library. (Council Chamber, 30th August, 1800.)

(O.C. 11 September, 1800, No. 48.)

(7) Letter from Major-General W. Popham to Mr. G. H. Barlow, Chief Secretary, enquiring if it is intended to retain for the use of the Fort William College the books meant for the Asiatic Society which were selected from Tipu Sultan's library. (Fort William, 4th September, 1800.)

(O.C. 18 December, No. 41.)

(8) Letter from Mr. W. Hunter, Secretary to the Asiatic Society, to Mr. G. H. Barlow, Chief Secretary, requesting permission to send to England free of duty some copies of the sixth volume of the 'Asiatic Researches' on the *Thurlow*, the *Rose* and the *Hawkesbury*. (Calcutta, 26th February, 1800.)

(O.C. 14 March, 1800, No. 156.)

(9) Minute of the Governor-General proposing that Jagannath Tarkapanchanan may be appointed to assist Sir William Jones in compiling the Digest of Hindu and Muhammadan Laws on a salary at Rs. 300 per month.

(Pub. Con., 22 August, 1788, No. 28.)

(2) *Miscellaneous Historical Documents.*

(10) Paper regarding the boundaries of Calcutta previous to the year 1742 and after 1756.

(Pub. Con., 4 July, 1787, No. 30.)

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(11) Resolution of the Board, defining the boundaries of Calcutta.

(Pub. Con., 21 April, 1794, No. 3.)

(12) Letter regarding the establishment of a Government Printing Office.

(Pub. Con., 28 January, 1779, No. 9.)

(13) Rates of Printing.

(Pub. Con., 28 January, 1779, No. 10.)

(14) System of instruction followed in the Sanskrit College, Calcutta, in 1841.

(Pub. Con., 10 November, 1841, Nos. 18–21.)

(15) Bethune's bequest and conveyance of the Female School to Government.

(Pub. Con., 12 September, 1851, Nos. 1–11.)
(Pub. Con., 17 October, 1851, Nos. 4–6.)

(16) Contract between the East India Company and the East Indian Railway Company for the extension of the experimental railway line to Delhi.

(15 February, 1854 (MSS.).)

(17) From Nizam Ali Khan, Nizam of Hyderabad, intimating that he has made over to Captain Kirkpatrick copies of the correspondence which passed between him and Tipu Sultan. Bears the seal of the Nizam.

(10 February, 1799, No. 19.)

(18) From Maharaja Krishna Raja Wodeyar of Mysore, expressing his gratitude on being released and restored to the kingdom of his ancestors which had been usurped by the dynasty of Tipu Sultan. Bears the seal of the Maharaja.

(12 July, 1799, No. 198.)

(19) A statement of the fifty lakhs to be paid by Sujah-ud-Dowlah. A statement of King's Debt to the Company.

(Pub. 9 September, 1765, No. 13.) It is written in the handwriting of Lord Clive.

(20) Plan of Fort William and part of the city of Calcutta 1753, by Lt. William Wills.

(3) *Calligraphic Manuscripts.*

(21) Persian illuminated manuscripts showing different styles of calligraphy.

12. Exhibited by Mr. Johan van Manen.

Three Tibetan Newspapers.

It is believed that hitherto only three newspapers have been published in the Tibetan language. All three were printed outside Tibet, and two have ceased to appear. The third has been started quite recently, and only one number of it has as yet been issued.

(1) *La dvags pho nyo.* A monthly newspaper. Lithographed. Edited and published by the Moravian Missionary A. H. Francke, in Ladakh. Begun in 1908, ceased at the outbreak of the Great War.

(2) *Bod yig phal skad kyi gsar hgyur.* Printed in Peking.

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Lithographed. A semi-official gazette of the Chinese Government in Chinese and Tibetan. Was published for four years, about six numbers annually, from the second to the fifth year of the second Chinese revolution, 1913–16.

(3) *Yul phyogs so sohi gsar hgyur me long.* Lithographed. Intended to be a monthly, but hitherto only one number has been published, in October, 1925. Published at Kalimpong by a Christian Tibetan, Tharchin.

13. Exhibited by the General Secretary.

(1) *The Society's publications of* 1925.

(*a*) Bibliotheca Indica.
(*b*) Catalogues.
(*c*) Miscellaneous.
(*d*) Journal.
(*e*) Memoirs.
(*f*) Indian Science Congress.
(*g*) Price-lists.

(2) *Photographs of paintings belonging to the Society.*

During 1925 about 20 paintings belonging to the Society have been cleaned and revarnished. Advantage has been taken of this operation to prepare photographic negatives of the paintings dealt with, under the most favourable conditions. A set of prints from these negatives, as far as available to date, is exhibited.

(3) *Portrait of the late Dr. N. Annandale.*

This photograph was presented to the Society by the Annandale Memorial Committee. Dr. Annandale, who died in 1924, was President of the Society during 1923. A record of his long and many services to the Society has been published in the *Proceedings* for 1924.

(4) *Persian and Arabic Manuscripts bound during 1925.*

(5) *Three Manuscript Drawings, McKenzie Collection.*

14. Exhibited by Dr. W. A. K. Christie.

Model for an Annandale Memorial Medal.

15. Exhibited by Maulavi Abdul Wali.

A Bengali book written in Persian script.

16. Exhibited by Raja Kshitindra Deb.

An Ancestral Firman.

17. Exhibited by Miss M. L Cleghorn.

Sericultural Specimens.

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ANNUAL REPORT FOR 1925.

The Council of the Asiatic Society of Bengal submits the following report on the state of the Society's affairs during the year ending 31st December, 1925.

Ordinary Members.

The calculated total of Ordinary Members on the roll of the Society at the close of 1925 was 462 as against 412 at the close of 1924. This means a net increase of 50 during the year, which, though not so large as that of last year, is nevertheless one of the largest annual increases in our long history, and has only been surpassed on four previous occasions. The number of new elections was this year even greater than that of last year and set up a new record with a total of 108.

Gains and losses during the year were as follows :—

Gains.		*Losses.*	
Old elections carried forward	7	Application withdrawn ..	1
New elections	108	Elections lapsed	14
Resignation withdrawn ..	1	Elections carried forward ..	3
		Deaths	7
		Resignations	25
		Rule 38	13
		Rule 40	1
		Transfer to Hon. Fellows ..	2
Total	116	Total	66

Initial total 412; net gain 50; final total 462.

With the year's gain the previous losses in membership for another three years have been again wiped out and there remain now only six years in the history of the Society (1909=1914) during which we have had a higher membership total. A few more years of strenuous work may bring us to the desirable result of passing the previous record in number of membership. With the increased activity and consequent popularity of the Society there also seems to have been an increase in applications for membership without adequate consideration of the applicants, and the number of elections during the year which have not been taken up and which have consequently lapsed is high, namely 14.

However desirable it may be that our members should draw attention to the work of our Society amongst their acquaintances, it would be well if, in proposing candidates for membership, they should make sure beforehand that the expression of the desire to join as a member corresponds to real interest.

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During the year the membership cards and registers have been subjected to a strict cross-check and the total numbers of the alphabetical and chronological lists tally completely.

It seems desirable to enforce more strictly the rules regarding non-payment of arrears in subscription fees, so that it may not be necessary to remove in any year a large number of members from our register under Rule 38, as has been the case during the current year.

Associate Members.

There was no change during 1925 on the roll of Associate Members.

The present number stands at 12 ; statutory maximum 15.

Ordinary Fellows.

At the Annual Meeting held on the 4th February, 1925, the following Members were elected Ordinary Fellows :—

Shamsu'l 'Ulama Dr. M. Hidayat Hosain.
Dr. G. E. Pilgrim.
Dr. C. V. Raman.

We lost through death Dr. D. B. Spooner, an Ordinary Fellow (1915).

The following three Ordinary Fellows resigned membership in the Society :—

I. H. Burkill (1910).
Lt.-Col. F. Wall (1921).
Mr. H. Beveridge (1921).

The names of the two following Ordinary Fellows, who were elected Honorary Fellows in 1922, have now been omitted from the list of Ordinary Fellows :—

Sir Thomas H. Holland.
Lieut.-Col. Sir Leonard Rogers.

At the end of 1925 the number of Ordinary Fellows was 34 ; statutory maximum 50.

Honorary Fellows.

During the year we lost through death the following Honorary Fellows :—

The Most Hon'ble Marquess Curzon of Kedleston (1906).
Sir R. G. Bhandarkar (1904).
Sir Paul Vinogradoff (1915).

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During the year two new Honorary Fellows were elected.

Prof. Sten Konow.
Mr. H. Beveridge.

At the end of the year, the number of Honorary Fellows was 26; statutory maximum 30.

Special Honorary Centenary Members.

Our two Honorary Centenary Members have remained with us.

Office Bearers.

The changes in the Council during the year were fewer than in the year before.

Major R. Knowles and Major H. W. Acton left for Europe on leave in May and returned in November. Dr. U. N. Brahmachari, Member of Council, acted for Major Knowles as Medical Secretary during his absence, and Lt.-Col. J. W. D. Megaw for Major Acton as Vice-President.

Dr. Baini Prashad left for Europe in July, and resigned the Treasurership. In his place Dr. S. L. Hora, Natural History (Biology) Secretary, was nominated Treasurer, while Major R. B. S. Sewell was nominated Natural History (Biology) Secretary in Dr. Hora's place.

Dr. P. J. Brühl resigned his seat on the Council in August, owing to other pressing demands on his time, and Mr. H. E. Stapleton was nominated in his place. Mr. C. W. Gurner resigned his seat on the Council in November on account of absence in Europe, and his place was left vacant till the end of the year.

During the absence of the Treasurer from Calcutta during the months of September and October, the General Secretary officiated for him, while during the absence of the General Secretary from Calcutta on a visit to Nepal, for three weeks in May and June, Dr. W. A. K. Christie officiated for him.

Office.

The General Secretary continued to perform the amalgamated duties of General Secretary and Assistant Secretary and, except for three weeks whilst absent from Calcutta, was daily in office every day of the year all Sundays and holidays included. Seeing that the Society's membership has increased by 120 in two years, and that with prompt attention to inquiries ever greater demands are made on the office, it was as little possible to cope with all work in the present as in the previous year. The Council, in consideration of these facts, resolved in the last meeting of the year to place before the new Council for

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1926 a recommendation to consider the appointment of a Head Clerk.

There were no changes in the office staff, but two new appointments were made, as alluded to in last year's report.

On the 2nd January, 1925, K. Subrahmoney Aiyer was appointed Library Assistant, on special duty to revise and bring up-to-date the library catalogue of printed works in European languages.

On the 2nd March, Sudha Gour Ghoshal was appointed file clerk, on special duty to arrange the old files of the Society.

In the subordinate staff some changes took place.

Correspondence continued to monopolise much of the time and energies of the General Secretary. During the year, however, a slight fall in the total of outgoing letters occurred; 3,127 letters were sent out as against 3,466 in 1924.

The number of incoming letters registered was 3,058.

The work on due preparation of Council and Committee Meetings constitutes a considerable part of the activity of the office. Over 200 Council circulars were issued during the year, and an additional number of Committee circulars.

By the appointment of a special File Clerk, the attempt to bring order in our archives has been taken up in earnest. The result of the first nine months of his activity has been the segregation and reduction to order of a large portion of our papers of the last 25 years under 37 major and 85 minor heads, being 555 separate files. Six large almirahs filled with miscellaneous papers still await his sifting hand.

Our card register of members was checked off with the ledgers and other registers and subjected to a close cross-check. We now feel confident that the totals given in the membership statistics for the year are correct.

A similar system and similar action have still to be introduced for our exchange and distribution services.

The problem of a quicker distribution of our publications is one that has engaged our attention during the year. It often takes several weeks before the last copy of a given number of *Journal* or *Memoirs* is despatched after it has been received from the press. The question of purchasing an addressograph has been considered by the Finance Committee, but it has been decided first to try the method of using printed addresses. This will be tried during the next year.

Most of the members of the Staff showed zeal and interest in their work during the year, and generally the prevailing spirit was very satisfactory.

Council.

The Council met twelve times during the year. The attendance averaged 11 of the 20 component Members.

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A resolution of thanks to Dr. Baini Prashad for his valuable labours was, on his relinquishing the Treasurership, passed by the Council.

Finance Committee.

The Finance Committee continued during the year to meet separately on dates different from those fixed for the Council meetings. The method has continued to prove beneficial in allowing fuller consideration of questions of finance.

Rules and Regulations.

On a proposal by the Council and by vote of the Members, a change was made in the Rules of the Society, fixing the day of the week on which the General Meetings are to be held to be Monday instead of Wednesday.

On the proposal of a special Committee constituted for the purpose of considering the existing Regulations regarding the election of Ordinary Fellows, a new set of Regulations was adopted.

On a proposal of a special Committee constituted for the purpose, a set of Regulations was adopted regarding General Lectures to be annually delivered in the Society's Rooms.

Indian Science Congress.

The twelfth Annual Meeting of the Indian Science Congress was held at Benares, from January 12th to 17th, 1925, under the patronage of His Highness the Maharaja of Benares, G.C.S.I., G.C.I.E. Dr. M. O. Forster, F.R.S., was President. The Proceedings of the Congress were published in November, a publication of 378 pages. During the latter months of the year, the usual administrative work for the Congress in connection with the next Session (thirteenth Congress), to be held in Bombay, was performed by the Society's Office. The preparatory work, with the continued expansion of the Congress, becomes year by year more exacting, entailing a heavy burden on the Society's staff. As in previous years, punctuality and foresight in sending in papers or subscriptions left room for considerable improvement on the part of the members. The rush at the end of the year was exceedingly great. This year the abstracts were prepared somewhat earlier and despatched by post to members, together with the programme. A number of applications came in during and after the Christmas holidays; some too late to allow a reply to reach the applicants at their home addresses. These could only be attended to by overtime work of the greater part of our office staff during the holidays.

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As usual the Society contributed a substantial grant to the Congress funds, this year a little over Rs. 1,000.

The General Secretaries of the Congress during the year continued to be, as in the year before, Dr. J. L. Simonsen, and Dr. S. P. Agharkar.

The general administration of the Congress, when not in Session, was, as hitherto, attended to by the office of the Society.

The financial and administrative relations of the Society and the Congress formed a subject of discussion in one of the Society's Council Meetings. It was felt that it should be the general policy of the Congress to endeavour to become more and more financially self-supporting and gradually to undertake responsibility for expenditure in connection with the clerical and administrative work performed for it in the Society's office.

Indian Museum.

MM. Haraprasad Shastri continued as the Society's representative on the Board of Trustees of the Indian Museum, under the Indian Museum Act, X, of 1910.

Kamala Lectureship.

The Council's nominee to serve on the Election Committee of the Kamala Lectureship, administered by the Calcutta University, was again MM. Haraprasad Shastri.

Deputations.

The Society received the following invitations to be represented at various functions of public bodies :—

Société de chimie industrielle. Centenaire de l'industrie de la stéarinerie. Paris, October.

Russian Academy of Sciences. Centenary. Leningrad and Moscow, September.

For the first meeting no delegate was found able to attend in person, and it was decided to send a congratulatory letter.

For the Russian celebrations the Council invited Prof. C. V. Raman, Vice-President of the Society, to represent it. Prof. Raman accepted the invitation and attended the meetings.

Congratulations.

The Society sent its congratulations to Dr. H. Jacobi on the occasion of his 75th birthday celebration.

H.M. the King of the Belgians.

A gratifying incident of the year was the surprise visit which His Majesty the King of the Belgians, accompanied

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by His Excellency the Governor of Bengal and staff, paid to the Society on September 16th.

His Majesty inspected our collections with interest, discussed various problems of Oriental Scholarship with animation, and expressed great satisfaction with his visit, which lasted for an hour and a half.

This is the first occasion on which a reigning Sovereign has paid a visit to our Society, and as it was entirely due to His Majesty's own initiative, this token of Royal interest in our labours was all the more welcome.

In the next General Meeting held after the visit, report of it was made, and the General Secretary was instructed to express the thanks of the Society to His Majesty for the honour done by him to our Institution.

Visits.

On the 12th April, Sir Mohamed Habibullah, Member for Education, Health and Lands, paid a visit to the Society and examined its collections minutely and with interest. This practical demonstration of sympathy with our labours was greatly appreciated.

Barclay Memorial Medal.

The award for 1923 was announced at the Annual Meeting in February, 1925. The medal for the year was awarded to Lieut.-Col. S. R. Christophers, C.I.E., O.B.E., M.B., I.M.S.

The medal for the year 1925 is awarded to Lieut.-Col. J. Stephenson, C.I.E., B.Sc., M.B., Ch.B., F.R.C.S., F.R.S.E., I.M.S.

Elliott Prize for Scientific Research.

The Trustees decided that no essay had been received of sufficient merit to deserve a prize.

They further decided that two prizes would be offered for 1926, to be awarded to the authors of the best essays giving the results of original research or investigation in :—

(*a*) Physics, and

(*b*) Geology and Biology (including Pathology and Physiology),

and published during the years 1922 to 1925 inclusive.

A notification to this effect was published in the *Calcutta Gazette* in January, 1926.

Dr. Annandale and Sir Asutosh Mookerjee Memorials.

The Committee constituted to submit proposals with a view to perpetuate the memory of the late Dr. Annandale

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by the Society, made its recommendations, which were accepted by the Council

A brass tablet and sepia portrait are to be hung in the Society's rooms. The die for a medal is to be struck, the balance of the memorial fund to be invested, and the income thereof to be used quinquennially for the presentation of a medal to the person judged to have made the most important contribution, during the five previous years, to anthropology in Asia.

The portrait has been received.

The Committee similarly constituted to submit proposals with a view to perpetuate the memory of the late Sir Asutosh Mookerjee by the Society, has not yet reported.

Society's Premises and Property.

Little of importance is to be recorded under this heading. After the complete renovation of our building in 1923, major operations were not called for. Some repairs were undertaken to a faulty place in the new malthoid covering on the roof and some improvements were made in the lavatory room.

The new steel-shelving fitted in the library is mentioned under its appropriate heading. A new fan was added in the newly arranged retiring room, and the room itself was white-washed, painted and cleaned.

During one of the summer storms, the loosely built front garden wall of the Society was blown down and it was solidly rebuilt at an expense of Rs. 1,645, in a manner specially devised to allow for its exploitation for advertising purposes.

Apart from the furnishing of the new retiring room at a cost of approximately Rs. 1,100, some furniture was renewed and improved, and in the lumber room an old mahogany side-board was discovered which was put together and repaired at a trifling cost, forming now an object of considerable beauty and utility

Constant attention has still to be paid to the state of our furniture. Several old pieces need replacement by more modern and up to-date material. Office furniture also needs attention. With the introduction of general lectures annually, consideration should be given to the question whether it is desirable for the Society to invest in the required number of collapsible chairs or to hire them for each occasion.

The questions of a care-taker to supervise cleaning and upkeep, and of periodical building inspection remain urgent.

Accommodation.

As foreshadowed in last year's report, a room on the ground floor has been set apart and furnished as a retiring room for the

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Members. Chairs, tables and a writing desk have been supplied as also a fan and electric light. The photographic portraits of late Presidents and distinguished members of the Society which we possess, have been hung in this room which offered suitable wall space for the purpose. The adjoining lavatory room has also been re-furnished. More compact storing in our Library wings, effected by the new steel-shelving, has provided space for most of the contents displaced from these rooms.

A problem inherent in the architecture of our spaciously planned building is the absence of a set of small work-rooms. We need rooms, on the first floor, damp-free, for the housing of delicate instruments, such as a MS. reproducing camera and other fragile possessions.

Artistic and Historical Possessions.

With the help of a legacy from the late Dr. Annandale, to an amount of Rs. 1,364, and a budget grant of Rs. 500, the work of cleaning, re-varnishing and, where needed, repairing of our paintings was taken up. The four pictures selected last year were returned early in the year and the work on seventeen further paintings was finished. The results have been most satisfactory. Advantage has been taken of this operation to prepare photographic negatives of the renovated paintings under the most favourable conditions. By the end of the year eight negatives have been prepared and excellent prints were obtained from them. It is the intention gradually to complete the set of negatives and prints and to place copies of the latter on sale to Members. The total expenditure under this heading has been Rs. 2,035, slightly in excess of the budgetted provision, and further work has to wait for the current year. It is the intention to deal one by one with our entire collection. When the paintings have been finally dealt with, the copper plates have next to be taken up, and a minute stock has to be taken of our other possessions.

As the renovation of our paintings has drawn attention to the fact that nearly all of them are directly exposed to the sun at certain times of the day, it was decided to cover them all with sliding curtains, so as to prevent the deteriorating action of light and to promote general preservation. Mrs. Sewell kindly undertook to look after the details of this matter (as well as of other arrangements of a domestic nature) and proved of invaluable assistance.

Presentations, Donations, and Legacies.

During the year, we received a donation of Rs. 1,000 from Mr. W. K. Dods for the purpose of binding books and MSS. This welcome gift, for which the Council tendered its thanks

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to the generous donor, has enabled us to make very substantial progress with our binding programme. The sum was, according to the wishes of the giver, completely utilised during the year for this purpose.

MM. H. P. Shastri presented two valuable Sanskrit MSS., one a word-index to the Lalitavistara, and the other the re-discovered portion of Śalihotra's treatise on horses.

Sir George Grierson presented beautiful typescript copies of two unpublished Kashmiri poems, one with an English translation: Shrī Ramavātāra Carita, and Shrī Kṛṣṇāvatāralīla.

The Annandale Memorial Committee presented a framed sepia portrait of Dr. Annandale.

Donations of books are mentioned under the heading Library.

Library.

The installation of steel shelving in the north wing of the library was completed and an additional five racks were erected 16 feet high and 15 feet long with intermediate open flooring, a side gallery along the whole width and a second ladder giving access to it. The total capacity of the installation is 3,360 running feet of shelf space for octavo volumes and 450 running feet for quartos and folios. This has at least trebled the total book accommodation in the room.

In addition, in the south wing, a special shelf was built to hold our Tibetan Tanjur and other Tibetan works, so that now our fairly large Tibetan collection is adequately arranged. One other special shelf was built for our 'elephant' size works, such as port-folios, atlases and books of larger than folio size. The total cost of these additions was Rs. 7,973. The advantage of placing 'elephant' size volumes horizontally and on shelves narrowly placed together is known to every librarian. Advantage was taken of the rearrangement of the 'elephant' size volumes, to examine the collection in detail, which on account of the former cumbersome arrangement, was previously a very difficult task. The examination has revealed the existence amongst them of half a dozen very valuable MSS., about which at some future occasion detailed description will be given.

The books occupying one complete room, now set apart for members as a retiring room, have been placed on the new racks, and the resultant all-round improvement is very great. A fair amount of surplus space is at present available for immediate expansion of the book-stock on the shelves in the north room.

Bookbinding was the next great activity in the Library during the year. A library axiom is that a book worth preserving in a Library deserves and demands binding, and that no unbound book should be placed on the shelves. An attempt will be made in future to apply the maxim. Helped by a dona-

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tion of Rs. 1,000 from Mr. W. K. Dods, and a budget grant of Rs. 1,250, afterwards supplemented by an additional grant of Rs. 250, we have been able to bind 1 894 volumes at a cost of Rs. 2,501. The average annual expenditure for the previous ten years was Rs. 625 under this head. Though it is difficult to frame a correct estimate, the impression is at present that still 3,000 volumes of the old stock need binding or rebinding before the whole library is in a really good condition in this respect.

During the year 269 volumes of books and official reports, to the exclusion of periodicals, were received as presentations from various bodies and private persons. Amongst the more important items the following may be mentioned :—

Nihāyatu'l-'arab fī funūni'l adab : An Encyclopædia by An-Nuwayrī (Egyptian Govt.).
Pali-English Dictionary, Pali Text Society's Publication (Govt. of India).
Jatakatthakaya and Milindapanha, 11 Vols. (through the Siamese Consul General).
Asoka Text and Glossary. 2 parts. By A. C. Woolner (Oxford University Press).
Concordance of the Holy Bible in Armenian. By A. T. Astwasaboor. (M. J. Seth.)
Publicaties van den Oudheidkundigen dienst in Nederl. Indië. Vol. I. (Dutch East Indian Govt.).
Giessen University academical dissertations. (Giessen University.)
Hamburg University academical dissertations (Hamburg University.)
Hamburg University, Abhandlungen Auslandskunde 20 Vols. (Hamburg University).
Ilustrations of Metal Work in Brass and Copper. By Thurston and Hadaway (Mr. Percy Brown)
The Dome of the Rock in Jerusalem. By E. T. Richmond (Govt. of India).
The Siddhantas and the Indian Calendar. By R. Sewell (Govt. of India).

The expenditure on new purchases was Rs. 1,697.

The General Secretary supervised the rearrangement of the Tibetan books on the new shelves and directed his Tibetan munshi to compile a complete catalogue of the collection. He presented the carefully written MS., describing 476 printed items and 273 MSS., to the Society.

The copy for the revised Library Catalogue of printed books in European Languages was completed by the end of the year. It involved, besides the revision of the old printed Catalogue, the writing of over 5,000 new slips. The MS. is now ready for the press.

In museums and libraries efficient work demands far greater expenditure for work 'behind the scenes' than for the actual acquisition of new objects and books. It seems that our library expenditure, as it has been for many years, has not been sufficiently based on this principle. Further, the dead-weight of

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the maintenance charges of a large collection of books should not be chargeable to current income. That should be exclusively available for growth and current administration. This principle seems not to have been considered in the past. We have a collection of perhaps 100,000 printed volumes and MSS. in the aggregate. The collection has imperceptibly grown to such dimensions that upkeep and administration of the existing collection are getting beyond the means of the current income available for the purpose. For years we have only been able to allocate paltry sums annually for the purchase of new publications. We have under-bound, under-catalogued and under-bought. Though our exchanges are numerous and our collection of academical serials is rich, we are lagging behind in the acquisition of individual publications in all fields of Oriental study which of late years have become so extraordinarily productive. The mobilisation and assimilation of our accessions have not kept pace with their acquisition. The time has come to consider whether the institution of an endowment fund for the library is not called for and, if so, how to arrive at it. A rich and all round library, well catalogued and classified, known and deftly handled by an expert staff, is needed for our work and is the chief asset of our members. The Council has decided to increase substantially its budget grant for the acquisition of new books in the New Year, but increase of the book stock is, in the absence of a corresponding endowment fund, a mortgage on future resources.

Finance.

Appendix III contains the usual statements showing our accounts for 1925.

New statements are the following :—

Statement No. 16, Provident Fund, opened in conformity with Council decisions detailed in the report for the previous year.

Statement No. 17, Publication Fund, opened, as indicated in the report for the previous year, to receive all sale proceeds derived in respect of all the Society's publications, and initially credited with the approximate amount received from this source in previous years but inaccurately credited to O.P. Fund No. 1. (Statement No. 2).

Statements which appear for the last time, referring to Funds closed during the current year, are the following :—

Statement No. 10. Anthropological Fund, derived from a sum earmarked for the purchase of anthropological works for the Library. The available amount having been spent for this purpose, the Fund has been liquidated.

Statement No. 12, Bureau of Information. This Fund was a remnant of the transition stage in the modification of terms of Government grants formerly received for the Bureau

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of Information and at present for the Sanskrit MSS. Fund (Statement No. 4). The credit balance of the former has now been transferred to the latter.

Statement No. 15, Dr. Annandale Fund. The assets of this Fund having been expended on their specific purpose during the year, the Fund has been closed.

Statements which are carried over without change from the previous year pending final ascertainment of commitments are :—

Statement No. 11, Catalogue of Scientific Serial Publications.

Statement No. 13, International Catalogue of Scientific Literature.

The other statements are presented as in previous years and do not call for special comment.

Statement No. 23, shows the balance sheet of the Society and the different funds administered through it.

The credit balance of the Society's general fund at the close of the year was nominally Rs. 218,530-3-0, as against Rs. 219,734-6-2, on the 31st December, 1924. Of this amount Rs. 177,294 belongs to the Permanent Reserve, the working balance, exclusive of specific accounts and funds administered for Government, amounting to nominally Rs. 40,736-3-0 at the end of 1925, as against nominally Rs. 42,440-6-2 at the end of 1924.

In addition, the total credit balance for the various special funds of the Society at the close of the year amounted to nominally Rs. 69,028-8-1.

The total credit balance for Funds administered by the Society amounted to Rs. 23,933-0-2.

During the year Rs. 3,088 were received through admission fees, and three members compounded for their subscriptions to an amount of Rs. 790. The total, Rs. 3,878, will as usual be transferred to the Permanent Reserve. The Council during the year resolved to change the method of this transfer. Hitherto the receipts for entrance and compounding fees were transferred to the Permanent Reserve Fund by the allocation to it of investments to the face value of the amount required. The Council decided to invest the sums received in future to the full amount, without conversion of old investments at face value. In respect of the credit due to the Permanent Fund under this head for 1925, the transfer has to be effected in the new manner early in 1926. This amount is, therefore, a charge on the Temporary Reserve for 1926.

The Society has received the usual sanctioned grants from the Government of Bengal as follows :—

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For :	Rs.	Statement.
Journals	2,000	1
O.P. Fund No. 1	9,000	2
O.P. Fund No. 2	6,000	3
Sanskrit MSS. Fund	6,800	4
Total ..	23,800	

The Government of India annual grant of Rs. 5,000 for the Arabic and Persian Manuscripts Fund, which expired on the 31st of March, 1924, was not yet renewed during the year, but in November, 1925, the Government of India intimated their preparedness to sanction the renewal of the grant for five years, with retrospective effect from the 1st April, 1924, subject to supply being voted by the Legislative Assembly during its next session.

The income derived from advertising on part of the street front of the Society's property amounted to Rs. 6,852, a satisfactory increase over the previous year's income, and still capable of expansion.

The temporary investment of current funds in War Bonds is shown in Statement No. 21; amounts set aside for earmarked expenditure are shown in Statements Nos. 9, 14, and 18. Statement No. 19 gives an account of the amounts due to and by the Society for subscriptions, sales of publications and contingent charges.

Statement No. 20 gives an account of the Society's investments in Government securities which are deposited with the Imperial Bank of India. Their total face value amounts to Rs. 274,200 and their purchase price was Rs. 263,106-3-10. The total depreciation at the end of the year was Rs. 74,111-15-10, being an appreciation of Rs. 6,822 as compared with the figure at the end of 1924.

The Budget Estimates for the year 1925 were: Receipts Rs. 58,000, Expenditure Rs. 57,650. The actuals were: Receipts Rs. 60,693-0-2 and Expenditure Rs. 61,681-9-4. Of the Receipts Rs. 2,364 were extraordinary, by a donation and the realisation of a legacy, and Rs. 3,878 not available for expenditure but transferred to the Permanent Reserve Fund. Excess income over the Budget Estimate was chiefly derived as follows: Interest Rs. 2,000; Advertising Rs. 850; Miscellaneous Rs. 935; Subscriptions Rs. 1,600. An allocation was made in the budget of Rs. 8,500 for capital expenditure on steel shelving from the temporary reserve. Only approximately Rs. 4,850 were needed for the purpose. The excess in expenditure was mainly due to increase in staff, the institution of a Provident Fund, rebuilding of a wall, additional bookbinding and work on our paintings.

The Budget Estimate of probable expenditure has again been framed to foresee and meet demands under various heads

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based on energetic activity in various departments during the year. The receipts have been cautiously estimated.

BUDGET ESTIMATES.

Receipts.

	1925. Estimate.	1925. Actuals.	1926. Estimate.
	Rs.	Rs.	Rs.
Interest on Investments ..	10,000	12,141	11,500
Advertising	6,000	6,853	6,000
Annual grant from Government of Bengal	2,000	2,000	2,000
Miscellaneous..	500	1,516	1,000
Donations	..	1,000	..
Members' Subscriptions	10,500	11,597	13,000
Compounding fees	..	790	..
Admission fees	..	3,086	..
Dr. Annandale Fund	..	1,364	..
To Publications by Publication Fund	3,675	3,675	8,000
To Publications by book sales and subs to Jl. and Pr. and Memoirs	10,850	9,171	9,000
To Proportionate share in general expenditure by various funds ..	5,975	7,500	7,500
To Capital Expenditure by Temporary Reserve	8,500	..	..
TOTAL ..	58,000	60,693	58,000

Expenditure.

Salaries and Allowances ..	16,650	21,012	23,250
Commission..	400	465	500
Stationery	1,250	1,015	1,250
Fans, light, telephone	800	602	600
Taxes	2,000	1,753	1,750
Postage	1,900	1,033	1,100
Freight	100	6	50
Contingencies	1,400	806	1,000
Petty repairs	350	673	1,000
Insurance	350	344	350
Winter clothing	150	48	150
Furniture	2,000	1,123	1,000
Paintings	500	2,045	1,000
Building repairs	..	1,645	800
Provident Fund Share	..	1,470	500
Steel Shelving	8,500	7,974	..
Audit	350	310	250
Books, Library	1,500	1,712	3,000
Binding, Library	1,250	2,501	2,000
Journal and Proceedings and Memoirs	16,000	12,883	16,000
Printing Circulars	1,000	1,235	1,250
Contribution to I.S.C.	1,200	1,028	1,200
Total ..	57,650	61,683	58,000

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Publications.

Of the *Journal and Proceedings*, Vol. XX (for 1924) was completed during the year. The volume contained 730 pages and 21 plates, well maintaining the average bulk fixed as the standard. The title pages and index for the volume are in the press to be issued early next year (1926).

Of the *Memoirs*, four numbers were published. One was part X of Vol. VI, concluding that volume. Two others formed parts I and II of a special volume (IX) devoted to Geographic and Oceanographic Research in Indian Waters, by Major R. B. Seymour Sewell The fourth was the first number of a special volume (X) devoted to Studies in Santal Medicine and Connected Folklore, by the Rev. P. O. Bodding. The aggregate of these four numbers came to 200 pages in print, with 7 plates, well up to the annual average.

During the year, the title pages and indexes were published of Vols. III, V and VI, whilst those for Vol. VII were sent to the press. When the latter is published, early next year, arrears in the *Memoirs* in this respect will have been made good, with the exception of Vol IV of which the publication has been in suspense for a long time. Continuation of this volume is now being considered.

A Numismatic Supplement (No. 38) was issued, again with separate title pages and paging.

The Proceedings of the Twelfth Indian Science Congress were issued in November (380 pages).

During the year one volume of the Sanskrit MSS. Catalogue (Smṛti) was published; this is dealt with separately elsewhere in this report.

The publications of the year in the *Bibliotheca Indica* are also separately described.

The only miscellaneous publications of the year were two reprints of a bibliographical nature. We reprinted from the *Journal*, Mr. Majumdar's List of Kharoṣṭhi Inscriptions, and from Mr. Ivanow's Persian MSS. Catalogue, a List of Contents of Four Persian Poetical Tadhkiras.

It is hoped that it may prove possible to draw up and publish next year a list of all publications, not in the *Bibliotheca Indica*, available for sale by the Society.

The sales of our publications were very satisfactory during the year. They amounted to a total value of nearly Rs.9,000, exclusive of subscriptions to our periodicals.

During the year it was resolved to abolish subscriptions to separate volumes of the *Memoirs*, but to accept instead standing orders for all numbers published without regard to the volume of which they form part.

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The Baptist Mission Press.

The press continued to act as our chief printers, and to show its usual great care and willing co-operation in all work relating to the Society. During the year the Superintendent, Mr. C. H. Harvey, retired after a quarter of a century of management. The Council gave official expression to its great appreciation of the valuable services rendered to the Society by Mr. Harvey during his long term of service and close relationship with the Society. The new Superintendent, Mr. P. Knight, has since fully maintained the high traditions of the old management, for which the Council's hearty appreciation here finds expression.

Agencies.

Our European and Indian Agents remained unchanged. The amount of the book-sales effected through them was satisfactory.

Exchange of Publications.

The following applications for an exchange with the Society's publications were placed before the Council, with the decisions noted against them :—

		To be exchanged with :
1.	Indian Chemical Society, Calcutta, Quarterly Journal	Journal.
2.	Finnish Zoologico-Botanical Society, Helsingfors, Annals	Journal.
3.	Archæological Survey of Kashmir, Srinagar, Memoirs..	Journal.
4.	Forschungsinstitut fur Osten und Orient, Vienna, Berichte	Journal.
5.	Botanical Garden, Tiflis, Moniteur ..	Journal.
6.	Linguistic Society of America, Baltimore, Journal	Journal.

Meetings.

The Ordinary Monthly Meetings of the Society were held regularly every month, with the exception of the recess months of September and October.

As in the previous year, in several Meetings, after the reading of the papers, an informal exhibition was held of objects of interest, a measure which proved to exercise considerable attraction.

The hour of the meeting was changed to 5-30 p.m., and the meeting day from Wednesday to Monday. The changes have worked well.

The attendance averaged slightly over 20 members and one visitor, showing a small increase. In the December meeting, 31 members and four visitors were present, the highest

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total on record for an Ordinary Monthly Meeting for over 15 years.

It seems desirable to investigate closely whether means can be devised to combine greater attractiveness of the Monthly Meetings with full maintenance of their scholarly value.

Meetings of the Medical Section were held in February, March and August with an average recorded attendance of six members and 15 visitors.

Exhibits.

In the Ordinary Monthly Meetings a number of exhibits were shown during the year, and commented upon by the Exhibitors. Amongst them the following may be mentioned :—

The General Secretary : A collection of MSS. dating from the early decades of the Society, recently discovered; the Society's collection of Bible editions.

MM. H. P. Shastri : Two MSS. of interest : part of Śalihotra's treatise on horses (Sanskrit) and Ādikarmaracanā by Tatakaragupta (Sanskrit); a copper plate grant of Viśvarūpa Sena; Visnudharma (Sanskrit MS.); a genealogical tree of the family of Vallabācārya (MS).

Johan van Manen : Sanskrit MSS. from Nepal, Devapratimālakṣanam ; a collection of Nepalese brass votive lamps ; a faked vase.

Percy Brown : A specimen of modern Persian micro-calligraphy,

R. B. Seymour Sewell and B. S. Guha : A skull of the copper-age from S. Baluchistan.

General Lectures.

On a formal proposal by Mr. Tipper, the Council considered the question, mooted by the President in his previous Annual Address, of instituting general lectures to be held annually under the Society's auspices, to contribute towards the popularisation, in the best sense of the word, of its work. A committee was constituted to make formal proposals in the matter, which were submitted to and accepted by Council. It was resolved to arrange annually, during the winter months, for the delivery of up to four general lectures designed to interest an intelligent, non-technical public, to which admission should be free to members, and to non-members invited by the Council. The lectures are generally to be illustrated by lantern-slides. A set of Regulations regarding them was framed. The first lecture was given in December by an old Member and Fellow of the Society, Dr. J. Ph. Vogel, of Leyden University, who spoke to a large audience on the Buddhist Remains of Sumatra. The remaining three lectures of the winter season have been arranged for the beginning of the current year.

The President's At Home.

On the 20th March, the President gave an At Home in the rooms of the Society to the members and other guests, to meet

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His Excellency the Earl of Lytton. A distinguished and numerous company gathered together, and the function was a distinct social success. The Council highly appreciates the President's graceful action as also His Excellency the Governor of Bengal's renewed proof of interest in our affairs, in so freely and kindly giving of his overcrowded time to come amongst us.

Philology.

The philological activities of the year, in so far as they are not described under other headings, are represented by the philologicial articles published in the *Journal* and those read in the monthly meetings but not yet published. In the *Memoirs* this year no purely philological paper was published.

Of the *Journal*, four numbers were devoted to philology in its wider meaning: a miscellaneous Indianistic number, a numismatic number, and two Islamic studies numbers. The numismatic number contained two articles by Sir John A. Bucknill on the British East India Company's coinage for Penang, and by H. Nelson Wright and H. R. Nevill on the Metrology of the Early Sultans of Delhi. The other three numbers contained 14 articles already mentioned as read in the meetings, in the previous reports.

Papers read in the Monthly Meetings of the Society but not yet published are:—

Johan van Manen: A Collection of Tibetan Proverbs.
H. Bruce Hannah: Indian Origins.
Sri Ram Sarma: A forgotten Hero of Marwar.
Braja Lal Mukherjee: The word 'Vrā' in the Rig Veda.
Braja Lal Mukherjee: The Vrātyas and their Sacrifices.
B. C. Law: Data from the Sumangalavilāsinī.
B. C. Law: Gautama Budha and the Paribrājakas.
B. C. Law: Aṅga and Campā in Pāli Literature.
N. G. Mazumdar: The Dacca Image Inscription of the Reign of Lakshmaṇa-sena.
Sukumar Sen: Notes on the Use of the Cases in the Kaṭhaka-Saṃhitā.
N. B. Sanyal: The Predecessors of the Gāhaḍavālas.
H. Hosten, S.J.: A MS. Tamil Grammar by Fr. C. J. Beschi, S.J.
Harit Krishna Deb: Mede and Madra.
Abdul Wali: A Bengali Book written in Persian Script.

The majority of these papers will be published in the *Journal*.

Natural History, Biology.

During the past year, three numbers of the *Memoirs*, namely, the concluding part (10) of Vol. VI and parts I and 2 of Vol. IX, and one number (6) of Vol. XX of the *Journal* have contained biological matter. The concluding part of Vol. VI brings to an end the series of papers dealing with the "Zoological Results of a Tour in the Far East"; included in it are the Index and Title

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Page, etc., as well as a report by Dr. Chas. Chilton on the *Amphipoda*, of which he records twelve species, one of which is new. The new Vol IX is to contain a series of monographs by Major Sewell on Geographic and Oceanographic Research in Indian Waters. As such they partake of the nature of both Biology and Physical Science, and should be mentioned under both headings. The series aims at a presentation of the correlated results of many years of research and observation with regard to the subjects indicated in the title, and in all six different monographs are in contemplation at present.

The Biology and Physical Science Number of the *Journal* includes seventeen biological papers, of which ten have been mentioned in the report for the preceding year. Among the more recent papers, mention may be made of the account by Major L. M. Davies, R.A., of the Geology of the Kohat District. Mr. H. L. Chhibber has contributed a paper on the Copper Slags of Danta State, N. Gujarat; Mr. N. A. Yajnik and Mr. S. L. Kohli are jointly responsible for a note on the Radioactivity of certain Indian minerals, and Mr. H. C. Das-Gupta for a note on the Occurrence of *Scylla serrata* (Forskål). Two papers on botanical subjects were contributed during the year, namely, by Dr. H. Chaudhuri on a Disease of the garden Pea, and by Mr. Kalipada Biswas on the subaerial Algae of Barkuda Island in the Chilka Lake. On the Zoological side, three papers were published, one by Mr. C. J. George on the root-sucking Aphids of Coimbatore, another by Mr. S. Ribeiro on Coleoptera of the Family *Paussidae*, and the third by Mr. S. C. Law on local Names of some Birds of the Manbhum District.

The following papers were read at the Monthly Meetings of the Society but have not yet been published:—

"On the Habits of a Succineid Mollusc from the Western Ghats, by S. L. Hora. (Published, Rec. Ind. Mus., 1925.)

"Digestive and Reproductive Systems of the Male Ant, *Dorylus labiatus* Schuck," by Durgadas Mukherjee.

"Palæontological Notes on the Panchet Beds at Deoli, near Asansol," by Hem Chandra Das-Gupta.

"Algae of the Loktak Lake," by P. Brühl and Kalipada Biswas.

Natural History: Physical Science.

In the Biology and Physical Science Number of the *Journal* issued during the year, there appeared four articles more particularly relating to the latter subject.

D. Namasivayam, on Liesegang Rings.

Satyendra Ray, on the Earth's Electric Field and the Vertical Potential Gradient.

H. L. Chhibber, on a Microscopic Study of the Old Copper Slags at Amba Mata and Kumbaria, Danta State, N. Gujarat.

N. A. Yajnik and Saral Jang Kohli, on Radioactivity of some Indian Minerals.

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No other papers on physical science were read in the Monthly Meetings.

Major Sewell's series of monographs on Geographic and Oceanographic Research in Indian Waters, of which two appeared during the year as the first numbers of a special volume of the *Memoirs* set aside for this subject, were in reality the outstanding activity during the year under this heading and embody the correlated results of many years' systematic research. As in this case, however, the work partakes of a dual nature, a reference is also made to it under the heading Biology.

Anthropology.

The outstanding anthropological activity of the year was the publication of the first part of the Rev. P. O. Bodding's "Studies in Santal Medicine and Connected Folklore" in a special volume of the *Memoirs* set apart for the purpose. These studies are the mature fruit of experience and research stretching over a period of almost 40 years.

An anthropological number of the *Journal* was issued containing eight contributions; by J. H. Hutton, on some carved stones in the Dayang Valley; by Lily Strickland-Anderson, on the Khassis; by D. N. Majumdar, on various subjects connected with the Hos of Kolhan (4 papers), and by Sir Gilbert T. Walker, on Indian Boomerangs.

Papers read in the monthly meetings but not yet published, are:

J. J. Modi, a Note on the Custom of the Interchange of Dress between Males and Females.
B. S. Guha, a Preliminary Report on the Anthropometry of the Khassis.
Johan van Manen, a Note on the "Wild Men" of Tibet.

Amongst the exhibits in the Monthly Meetings, mention may be made of:

Johan van Manen, a collection of votive lamps from Nepal.
R. B. Seymour Sewell and B. S. Guha, a skull of the copper-age from S. Baluchistan.

Medicine.

Only three special meetings of the Medical Section were held during the year. Of the five papers presented, two have since received publication in the *Indian Medical Gazette*, whilst the two extensive papers by Majors H. W. Acton and R. N. Chopra on "Indian Diets, with Special Reference to their Influence on Conditions of Health and Disease" are pending publication, in an extended form.

At the meeting in February, 1925, Dr. A. C. Chandler discussed the migration of hookworm larvæ in the soil of infected areas.

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A paper by Major H. W. Acton, I.M.S., on "Giant Urticaria" shewed how common this disease is in India—often mistaken for filariasis, septic abscess, or even synovitis.

The two serial papers on Indian Dietaries by Majors H. W. Acton and R. N. Chopra, I.M.S., covered so wide a field that it is desirable that these papers should be re-written and published. They contain information probably nowhere else available, and deal with a subject of fundamental importance in Indian medicine.

Dr. U. P. Basu, M.B., M.R.C.P. (Lond.), dealt with heart diseases as observed in patients in Bengal.

Dr. U. N. Brahmachari read an interesting paper on abnormalities of the haemoglobinuric mechanism in man in the tropics.

Dr. A. C. Chandler also read a paper on the epidemiology of hookworm infection in the tea gardens of Assam, and pointed out the simple measures, which, if adopted, could be relied upon to relieve or to eradicate this infection.

The publication during the year in the Society's *Memoirs* of the Rev. P. O. Bodding's "Studies in Santal Medicine and Connected Folklore", deserves special mention. This voluminous work is the result of almost a lifetime of observation and association with the Santals. Quite apart from its great ethnographical value, it constitutes a very important contribution to the study of the indigenous Indian systems of medicine. In the future we may look forward to a time when India will have her own Pharmacopœia, self-contained and self-manufactured from sources available within her own borders. Included within such a pharmacopœia must, of necessity, be many Indian drugs and herbs of medicinal value, the actual value of which in different diseases remains to be investigated under the rigorous conditions of scientific medical research. Work such as this exhaustive memoir of Mr. Bodding's is of inestimable value in laying the foundations for such experimental research.

Bibliotheca Indica.

The year was again one of strenuous work and most satisfactory progress.

During the year seven fascicles were published, Nos. 1478—1484. One of them was a complete volume and three were of a bulk of several units. The output was equivalent to 15 fascicles of 96 pages.

The complete work issued was a reprint of the Sūrya-siddhānta, with MM. Sudhākara Dvivedi's Commentary, edited by Paṇḍit Kamala Kṛṣṇa Smṛtitīrtha (4 units).

Of the text of Ma'āṣir-i-Raḥīmī, edited by Dr. Hidayat Hosain, the second volume was completed in a single fascicle

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(5 units). The third and concluding volume is well under way. Begun in 1910.

Of the text of the 'Amal-i-Ṣāliḥ, by Mr. Ghulam Yazdani, a further instalment (2 units) was published. Begun in 1912.

Sir Wolseley Haig terminated his translation of the third volume of Badāōnī's Muntakhab-ut-tawārīkh with an index and preface. This work is now complete. Begun in 1884.

The same scholar also issued an index to his text edition of Khāfi Khān's Muntakhab-al-lubāb, and completed this work also. Begun in 1868.

Pandit Kamala Kṛṣṇa Smṛtitīrtha completed his edition of the Kṛtyaratnākara by the issue of preface and indexes. Begun in 1921.

Fascicles V of the text of Udayanācārya's Ātmatattvaviveka was also issued.

The net result was the completion of two old works, the completion of a volume of another work, and the re-issue of a fourth complete work.

Much other work is in hand.

Mr. Ivanow's second volume of his Catalogue of Persian MSS. progressed to 489 pages in type.

Preparations were made, and some work was actually taken in hand, to give effect to last year's Council decision to arrange for the continuation and completion of incomplete works previously taken up.

The MSS. of half a dozen Sanskrit works in the hands of the management of a local press which had gone bankrupt were recovered, and three of the works taken in hand again.

It was calculated that during the nearly 75 years of existence of the *Bibliotheca Indica*, the average production has been about three works annually. An endeavour has been made to maintain this average, and at the same time to arrange for some excess work on old works to bring them to a speedy termination, so as to reduce arrears, terminate old commitments, and to reduce the number of works simultaneously in hand.

New works sanctioned during the year and partly taken up were—

Sir George Grierson: Śri Kṛṣṇāvatāralīlā, Kāshmiri text and translation.

Sir George Grierson: Śri Ramāvatāracarita, Kashmiri text.

Prof. W. Caland: Vaikhānasa-gṛhya-sūtram, Sanskrit text with translation.

Rev. W. W. Winfield: Kui Grammar.

Prof. M. Mahfuzul Huq: Majma'u'l-baḥrayn, by Dārā Shikūh, Persian text and translation.

Continuation or completion was taken in hand of: the Haft-i-qlīm (Persian); Lower Ladakhi Version of the Kesar Saga (Tibetan); Ṭabaqāt-i-Akbarī (Persian text and transla-

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tion); Samarāicca Kahā (Prakṛt); Nityācāra-pradīpa (Sanskrit); Śatapathabrāhmaṇam (Sanskrit); Vidhānapāriǰātā (Sanskrit).

The work in this department is overwhelming and there are no limits to what could be undertaken save those imposed by money and time. Years of strenuous activity are needed to master the congestion which for several years has grown in this branch of our activities, but energy and continuity in a policy of steady, unremitting labour may attain this necessary result.

Work in our stock-room was zealously continued during the year, and of the 240 works published in the *Bibliotheca Indica*, 35 have now been sorted, counted, bundled, packed and labelled. These 35 works represent 6,675 complete sets at a sale value of slightly over Rs. 75,000.

The preparation of proper descriptive lists for the book-trade and buyers was continued, and at last a complete catalogue, with full business details concerning prices, completeness, etc., has been drawn up. This list was sent to the press late in the year and in the last few days of December first proofs were given. Early in the New Year the list will be available for distribution and it will then be kept in type for periodical revision and re-issue. It covers 92 pages print and has demanded considerable labour in its preparation.

The Council resolved to make preparations for the publication of a memorial volume relating to the series, approximately coinciding with its 80th anniversary, and as its 250th published work.

Catalogue of Sanskrit MSS.

MM. Haraprasad Shastri's great undertaking advanced again rapidly during the year.

Volume III, Smṛti, was finished and published during the concluding days of December. It is a volume of 1,142 pages, containing descriptions of 1,232 numbers. Volume IV, on History and Geography, was published previously, in 1923. Volume V, describing the Purāṇa Manuscripts is well advanced. By the end of the year 720 pages of it were in type and 584 pages had been printed. Galley proof had been given up to 60 numbers from the end.

During the year, the Resident Pandit Agornath Bhattacharya was appointed as MM. Shastri's assistant in the work on the Catalogue, in the place of Pandit Asutosh Tarkatirtha, deceased, and fulfilled his new duties capably.

The Council, by a formal resolution, placed on record its grateful thanks to MM. Haraprasad Shastri for his contribution, during the previous years, of Rs. 18,000 to the Society in aid of the printing of his Catalogue.

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Arabic and Persian Manuscripts, Search and Catalogue.

Substantial and gratifying progress is to be reported in this department. The staff remained unchanged. Mr. Ivanow completed the manuscript for the second volume of his catalogue of Persian Manuscripts, describing the works in the Curzon Collection. By the end of the year this was entirely in type (489 pages print) and 368 pages had been struck off. Work on the preface and indexes will require a few months more and by the middle of next year, the volume should be ready for issue. It will describe 756 numbers.

About 50 new Persian and Arabic MSS. were purchased for a total of about Rs. 350.

A careful check of the previously acquired MSS. revealed that 37 MSS. had not been entered in the registers; this omission was remedied.

The Maulvie placed on special duty to foliate all MSS. finished his task in the last days of the year. In 15 months he examined over 1,600 volumes and foliated over 2.70,000 leaves. The entire collection is now properly dealt with in this respect.

Binding was also strenuously continued, and 348 MSS. were bound during the year, making a total of 500 volumes since this form of activity was taken up on a systematic basis towards the end of the past year.

Numismatics.

Mr. R. O. Douglas, I.C.S., continued Honorary Numismatist to the Society during the year. One Numismatic Supplement, No. 38 (for 1924) was published, again as a separate number of the *Journal*, containing 38 pages text and two plates, with its own title page, list of contents and paging. It has not proved possible, with the very heavy demands on the Journal-space at the disposal of the Society, to do more during the year, or to make good the arrears in publication of the Supplement, which coincide with those of the *Journal* itself.

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[APPENDIX I.]

Membership Statistics.

(As calculated for December, 31st, of each year.)

YEAR.	ORDINARY.								EXTRA-ORDINARY.				FELLOWS.	
	PAYING.				NON-PAYING.									
	Resident.	Non-Resident.	Foreign.	Total.	Absent.	Life.	Total.	Total Ordinary Members.	Centenary Honorary.	Associate.	Total.	Grand Total Membership.	Honorary.	Ordinary.
1901 ..	123	133	13	269	37	22	59	328	4	12	16	344	26	..
1902 ..	126	126	14	266	47	21	67	333	4	13	17	350	26	..
1903 ..	127	126	15	268	46	21	67	335	4	13	17	352	24	..
1904 ..	132	130	14	276	46	21	67	343	4	13	17	360	30	..
1905 ..	144	133	12	288	48	20	68	356	4	13	17	373	29	..
1906 ..	173	147	15	335	52	20	72	407	4	12	16	423	30	..
1907 ..	174	175	20	369	31	20	51	420	4	12	16	436	28	..
1908 ..	181	193	17	391	38	19	57	448	4	13	17	465	30	..
1909 ..	183	217	13	413	40	20	60	473	4	14	18	491	28	..
1910 ..	209	217	16	442	43	23	66	508	4	14	18	526	27	17
1911 ..	200	225	19	444	53	22	75	519	3	14	17	536	28	19
1912 ..	203	229	19	451	43	23	66	517	3	13	16	533	27	24
1913 ..	200	211	19	430	46	23	69	499	3	14	17	516	27	28
1914 ..	191	187	19	397	50	26	76	473	3	14	17	490	24	27
1915 ..	171	188	21	380	40	25	65	445	3	15	18	463	29	31
1916 ..	145	159	18	322	60	25	85	407	3	15	18	425	26	33
1917 ..	150	144	15	309	45	24	69	378	2	12	14	392	22	35
1918 ..	153	145	17	315	43	24	67	382	2	10	12	394	22	39
1919 ..	141	128	15	284	64	25	89	373	2	11	13	386	18	36
1920 ..	161	134	15	310	32	26	58	368	2	11	13	381	28	38
1921 ..	160	132	16	308	26	26	51	359	2	12	14	373	28	40
1922 ..	160	141	16	317	26	26	52	369	2	13	15	384	30	39
1923 ..	147	120	13	280	30	27	57	337	2	11	13	350	28	37
1924 ..	209	134	12	355	29	28	57	412	2	12	14	426	27	37
1925 ..	263	137	12	412	23	27	50	462	2	12	14	476	26	34

N.B.—Honorary Fellows were styled Honorary Members before 1911.

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[APPENDIX II.]

List of Publications issued by the Asiatic Society of Bengal during 1925.

(a) Catalogues :

	Price. Rs. A. P.
Descriptive Catalogue of Sanskrit Manuscripts	
Vol. III : Smṛti, pp. 1–LXXI, 1–1066	15 0 0

(b) Bibliotheca Indica (New Series):

No. 1478 : Badāoni, translation. Vol. III, Fasc. 5 ..	1 0 0
No. 1479 : Kṛtyaratnakāra, Fasc. 6	0 12 0
No. 1480 : Ātmatatvaviveka, Fasc.5	0 12 0
No. 1481 : Sūrya-Siddhānta (complete) (4 units) ..	3 0 0
No. 1482 : Muntakhab-al-lubāb. Vol. III, Fasc. 6 ..	1 0 0
No. 1483 : Maasir-i-Rahimi, Vol. II, Fasc. 2 (5 units)..	5 0 0
No. 1484 : ‘Amal-i-Salih. Vol. II, Fasc. 2 (2 units) ..	2 0 0

(c) Memoirs :

Vol. VI. Part 10 : Zoological Results of a Tour in the Far East	1 2 0
Vol. IX. No. 1 : Geographic and Oceanographic Research in Indian waters	3 15 0
Vol. IX, No. 2 : Geographic and Oceanographic Research in Indian waters	2 4 0
Vol. X, No. 1 : Studies in Santal Medicine and Connected Folklore	5 1 0

Title pages and indexes for Vols. III, V, and VI. (Free to members and subscribers on application.)

(d) Journal and Proceedings (New Series):

	Price. Rs. A. P.
Vol. XX.	
No. 1 : Philological	4 2 0
No. 2 : Official	4 2 0
No. 3 : Islamic Studies	1 2 0
No. 4 : Numismatic	1 14 0
No. 5 : Anthropological	2 10 0
No. 6 : Biological and Physical Science	8 10 0
No. 7 : Islamic Studies	3 12 0
Vol. XXI.	
No. 2 : Official	4 14 0

Title pages and indexes for Vols. XVIII and XIX. (Free to members and subscribers on application.)

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(e) Miscellaneous :

	Price. Rs. A. P.
Proceedings, Twelfth Indian Science Congress ..	9 0 0
A List of Kharoṣṭhī Inscriptions	1 2 0
List of Contents of Four Persian Poetical Tadhkiras	1 2 0

Price Lists for Free Distribution.

Sanskrit works on Smṛti (24).
Sanskrit works on Mīmāṁsa (4).
Persian works on the History of Iran and Central Asia (4).
Historical works translated into English from Persian and Arabic (9).
Historical works relating to India written in Persian (17).
Works on the secular sciences of the Hindus (12).

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[*Appendix III.*]

Abstract Statement

of

Receipts and Disbursements

of the

Asiatic Society of Bengal

for

the Year 1925.

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STATEMENT No. 1.

1925. *Asiatic Society*

Dr.

To Establishment.

	Rs. As. P.	Rs. As. P.
Salaries and Allowances	21,012 2 11	
Commission	465 1 6	
		21,477 4 5

To Contingencies.

Stationery	1,014 12 3	
Fan and Light	391 12 0	
Telephone	209 10 10	
Tax	1,753 4 0	
Postage	1,033 12 6	
Freight	5 14 0	
Contingencies	805 11 0	
Petty Repairs	672 8 0	
Insurance	343 12 0	
Winter Clothing	47 8 0	
Furniture	1,122 9 3	
Paintings, Upkeep	2,045 0 0	
Building Repairs	1,645 0 0	
Provident Fund Share	1,470 3 0	
Steel Shelving	7,973 8 0	
Audit Fee	310 0 0	
		20,844 12 10

To Library and Collections.

Books	1,711 11 7	
Binding	2,501 2 0	
		4,212 13 7

To Publications.

Journal and Proceedings and Memoirs ..	12,883 7 3	
Printing Circulars, etc.	1,234 13 0	
Contribution to I.S.C.	1,028 6 3	
		15,146 10 6
Bad Debts written-off	..	1,192 5 4
Balance as per Balance Sheet	..	2,18,530 3 0
Total ..		2,81,404 1 8

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STATEMENT No. 1.

of Bengal. *1925.*

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		2,19,734 6 2
By Cash Receipts.		
Interest on Investments	12,141 3 6	
Advertising	6,852 15 11	
Annual Grant from the Government of Bengal	2,000 0 0	
Miscellaneous	1,435 12 9	
Donation	1,000 0 0	
		23,430 0 2
By Personal Account.		
Members' Subscriptions	12,570 11 4	
Compounding Subscriptions	790 0 0	
Admission Fees	3,088 0 0	
Miscellaneous	80 13 10	
		16,529 9 2
By Transfer from Funds.		
By Dr. Annandale Fund	1,364 2 0	
To Publications, by Publication Fund Reserve	3,675 0 0	
To Publications, by Book Sales and Subscriptions to Journal and Memoirs ..	9,171 0 2	
To Proportionate Share in General Expenditure by various Funds	7,500 0 0	
		21,710 2 2
Total ..		2,81,404 1 8

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STATEMENT No. 2.

1925. *Oriental Publication*

From a Monthly Grant made by the Government of Bengal for the Publi- (Rs. 500), and for the Publication of Sanskrit

Dr.

To Cash Expenditure

	Rs. As. P.	Rs. As. P.
Printing	10,883 6 6	
Editing and Indexing	1,299 6 11	
Transfer to Publication Fund	42,139 1 10	
		54,321 15 3
Proportionate Share in General Expenditure		3,000 0 0
Bad Debts written-off		5 0 0
Balance as per Balance Sheet		2,025 0 3
Total ..		59,351 15 6

STATEMENT No. 3.

1925. *Oriental Publication*

From a Monthly Grant made by the Government of Bengal of Historical Interest

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Printing	3,460 10 0	
Stationery	23 0 0	
		3,483 10 0
Balance as per Balance Sheet		14,530 14 6
Total ..		18,014 8 6

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STATEMENT No. 2.

Fund, No. 1, in Account with the A.S.B. *1925.*

cation of Oriental Works and Works of Instruction in Eastern Languages Works hitherto unpublished (Rs. 250).

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		50,009 3 6
By Cash Receipts.		
Annual Grant	9,000 0 0	
Advances recovered	5 13 6	
		9,005 13 6
By Personal Account.		
Credit Sale of Publications		336 14 6
Total ..		59,351 15 6

STATEMENT No. 3.

Fund, No. 2, in Account with the A.S.B. *1925.*

Rs. 250 for the Publication of Arabic and Persian Works of (without remuneration).

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		12,014 8 6
Annual Grant, 1924-25	3,000 0 0	
By Cash Receipts.		
Annual Grant, 1925-26	3,000 0 0	
		6,000 0 0
Total ..		18,014 8 6

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STATEMENT No. 4.

1925. *Sanskrit Manuscripts Fund*

From an Annual Grant of Rs. 3,200 made by the Government of Bengal by the Society for Government; and Rs. 3,600

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Pension	120 0 0	
Printing	6,844 14 6	
Insurance	125 0 0	
Binding	90 6 0	
Allowance	5,400 0 0	
Gratuity	800 0 0	
		13,430 4 6
Proportionate Share in General Expenditure		2,000 0 0
Balance as per Balance Sheet ..	..	15,031 5 3
Total ..	..	30,461 9 9

STATEMENT No. 5.

1925. *Arabic and Persian Manuscripts*

From an Annual Grant of Rs. 5,000 made by the Government of India for by the Society for Government; for the Purchase of further Persian Manuscripts found

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account	..	6,501 15 7
To Cash Expenditure.		
Manuscripts Purchase	351 0 0	
Binding	579 10 0	
Insurance	31 4 0	
Cataloguing	3,000 0 0	
		3,961 14 0
Proportionate Share in General Expenditure	..	2,500 0 0
Total ..		12,963 13 7

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STATEMENT No. 4.

Account, in Account with the A.S.B. *1925.*

for the Publication of the Catalogue of Sanskrit Manuscripts acquired from the same Government for Research Work.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account		22,061 9 9
By Cash Receipts.		
Annual Grant for cataloguing	3,600 0 0	
Annual Grant for preservation of Sanskrit Manuscripts, 1925-26	3,200 0 0	
		6,800 0 0
By Transfer.		
From Bureau of Information Fund Account ..		1,600 0 0
Total ..		30,461 9 9

STATEMENT No. 5.

Fund, in Account with the A.S.B. *1925.*

the Cataloguing and Binding of Arabic and Persian Manuscripts, acquired Manuscripts, and for the Preparation of Notices of Arabic and in various Libraries in India.

Cr.

	Rs. As. P.
By Balance as per Balance Sheet	12,963 13 7
Total ..	12,963 13 7

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STATEMENT No. 6.

1925. *Indian Science Con-*

From Subscriptions of Members

Dr.

To Cash Expenditure.

	Rs.	As.	P.	Rs.	As.	P.
Postage	219	8	0			
Contingencies	6	13	6			
Indexing	55	0	0			
Printing	3,803	1	0			
Advance	1,280	0	0			
				5,364	6	6
To Balance as per Balance Sheet				4,658	2	11
Total ..				10,022	9	5

STATEMENT No. 7.

1925. *Barclay Memorial*

From a sum of Rs. 500 odd given in 1896 by the Surgeon encouragement of Medical

Dr.

	Rs.	As.	P.
To Balance as per Balance Sheet	651	6	10
Total ..	651	6	10

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STATEMENT No. 6.

gress, in Account with the A.S.B. *1925.*

of the Congress and Donations.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account..		5,414 6 5
By Cash Receipts.		
Subscriptions	3,285 8 0	
Donations	1,300 0 0	
Advance	22 11 0	
		4,608 3 0
Total ..		10,022 9 5

STATEMENT No. 7.

Fund, in Account with the A.S.B. *1925.*

General, I.M.S., for the foundation of a medal for the and Biological Science.

Cr.

	Rs. As. P.	Rs. As. P.
By Balance from last Account—		
Rs. 400, 3½% G.P. Notes, 1854-55 at face value	400 0 0	
Rs. 100, 3½% G. P. Notes, 1900-01 at face value	100 0 0	
Accumulated Interest	136 10 10	
		636 10 10
By Cash Receipts.		
Interest realized for the year		14 12 0
Total ..		651 6 10

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STATEMENT No. 8.

1925. *Servants' Pension*

Founded in 1876 as the Peddington Pension Fund

Dr.

		Rs. As. P.
To Balance as per Balance Sheet		1,857 11 10
TOTAL ..		1,857 11 10

STATEMENT No. 9.

1925. *Building*

From a sum of Rs. 40,000 given by the Government of India proceeds of a portion

Dr.

		Rs. As. P.
To Balance as per Balance Sheet		13,602 6 6
TOTAL ..		13,602 6 6

STATEMENT No. 10.

1925. *Anthropological*

From a sum set aside in 1918 for the

Dr.

		Rs. As. P.
To Balance from last Account		14 10 7
TOTAL ..		14 10 7

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STATEMENT No. 8.

Fund, in Account with the A.S.B. *1925.*

with Rs. 500 odd from the Peddington Pension Fund.

Cr.

	Rs	As.	P.
By Balance from last Account	1,808	11	10
By Cash Receipts.			
Interest realized for the year	49	0	0
Total ..	1,857	11	10

STATEMENT No. 9.

Fund, in Account with the A.S.B. *1925.*

towards the rebuilding of the Society's premises, and from the sale of the Society's land.

Cr.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account				13,602	6	6
Total ..				13,602	6	6

STATEMENT No. 10.

Fund, in Account with the A.S.B. *1925.*

purchase of Anthropological books.

Cr.

	Rs.	As.	P.
By Transfer.			
By Contribution by the A.S.B.	14	10	7
Total ..	14	10	7

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STATEMENT No. 11.

1925. Catalogue of Scientific Serial Pub-

Dr.

		Rs.	As.	P.
To Balance as per Balance Sheet		415	0	0
TOTAL ..		415	0	0

STATEMENT No. 12.

1925. Bureau of Inform-

From an Annual Grant of Rs. 1,200 made by the Govern-

Dr.

To TRANSFER.

		Rs.	As.	P.
Transfer to Sanskrit Manuscripts Fund		1,600	0	0
TOTAL ..		1,600	0	0

STATEMENT No. 13.

1925. International Catalogue of Scien-

Dr.

		Rs.	As.	P.
Balance as per Balance Sheet		4,424	7	8
TOTAL ..		4,424	7	8

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STATEMENT No. 11.

lications, Calcutta, in Acct. with the A.S.B. 1925.

Cr.

			Rs. As. P.
By Balance from last Account	..	..	415 0 0
	TOTAL	..	415 0 0

STATEMENT No. 12.

ation, in Account with the A.S.B. *1925.*

ment of Bengal for the Salary of the Officer-in-Charge.

Cr.

		Rs. As. P.	Rs. As. P.
By Balance from last Account	..	..	1,600 0 0
	TOTAL	..	1,600 0 0

STATEMENT No. 13.

tific Literature, in Account with the A.S.B. *1925.*

Cr.

			Rs. As. P.
By Balance from last Account	..	..	4,424 7 8
	TOTAL	..	4,424 7 8

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STATEMENT No. 14.

1925. *Akbarnama Reprint*

From a sum set apart in 1923 for

Dr.

	Rs.	As.	P.
To Balance as per Balance Sheet	7,764	10	8
TOTAL ..	7,764	10	8

STATEMENT No. 15.

1925. *Dr. Annandale*

From a Legacy be-

Dr.

	Rs.	As.	P.
To Transfer to A.S.B.	1,364	2	0
TOTAL ..	1,364	2	0

STATEMENT No. 16.

1925 *Provident Fund Ac-*

From contributions by the

Dr.

	Rs.	As.	P.
To Balance as per Balance Sheet	1,880	6	0
TOTAL ..	1,880	6	0

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STATEMENT No. 14.

Account, in Account with the A.S.B. *1925.*

the Reprint of the Akbarnama in England.

Cr

		Rs. As. P.
By Balance from last Account		7,764 10 8
TOTAL ..		7,764 10 8

STATEMENT No. 15.

Fund, in Account with the A.S.B. *1925.*

queathed by Dr. Annandale.

Cr.

		Rs. As. P.
By Balance from last Account		1,364 2 0
TOTAL ..		1,364 2 0

STATEMENT No. 16.

count, in Account with the A.S.B. *1925.*

Staff and the Society.

Cr.

By CASH RECEIPTS.

	Rs. As. P.	Rs. As. P.
Staff Contribution..	410 3 0	
A.S.B. Contribution	410 3 0	
A.S.B. Initial Contribution in consideration of old service	1,060 0 0	
		1,880 6 0
TOTAL ..		1,880 6 0

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STATEMENT No. 17.

1925. *Publication*

From Sale Proceeds

Dr.

To Cash Expenditure.

	Rs. As. P.	Rs. As. P.
Postage		577 2 0
Bad Debts Written-off		100 1 6
To Transfer.		
To Publication from Reserve ..	3,675 0 0	
To Publications from Book Sales and Subscriptions to Journal and Proceedings and Memoirs	9,171 0 2	
		12,846 0 2
Balance as per Balance Sheet		39,083 13 5
Total ..		52,607 1 1

STATEMENT No. 18.

1925. *Fixed Deposit*

From a sum set aside to pay the

Dr.

	Rs. As. P.
To Balance from last Account	12,073 7 10
Interest accrued on Fixed Deposit	432 1 10
	12,505 9 8
Less Depreciation on 31st December, 1925 ..	45 15 8
Total ..	12,459 10 0

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STATEMENT No. 17.

Fund, in Account with the A.S.B. *1925.*

of Publications.

Cr.

By Cash Receipts.

		Rs. As. P.	Rs. As. P.
Transfer of Funds from O.P.E. (1) ..		42,139 1 10	
Cash Sale of Publications ..		864 13 3	
Interest realized..		432 1 10	
			43,436 0 11
By Personal Account.			
Credit Sale of Publications ..		7,683 0 2	
Subscriptions to Journal and Proceedings and Memoirs		1,488 0 0	
			9,171 0 2
Total ..			52,607 1 1

STATEMENT No. 18.

Account, London. *1925.*

Printing of the Kashmiri Dictionary.

Cr.

	Rs. As. P
Balance as per Balance Sheet	12,459 10 0
Total ..	12,459 10 0

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STATEMENT No. 19.

1925. *Personal*

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account	..	5,971 12 6
Advances for Postage, etc.	..	353 14 0
Asiatic Society's Subscriptions, etc. ..	16,529 9 2	
Subscriptions and Book Sales, etc., from Publication Fund	9,171 0 2	
Sale of Oriental Publications as per Fund No. 1	336 14 6	
		26,037 7 10
TOTAL ..		32 363 2 4

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STATEMENT No. 19.

Account. *1925.*

Cr.

		Rs.	As.	P.
By Cash Receipts during the year		26,918	4	6
Bad Debts written-off, A.S.B.		1,192	5	4
Do.	O P. Fund (1)	5	0	0
Do.	Publication Fund	100	1	6

By Outstandings.	Amount due to the Society.			Amount due by the Society.				
	R	As.	P.	Rs.	As.	P.		
Members ...	3,134	6	0	238	6	0		
Subscribers ...	..	...	...	144	0	0		
Bill Collector's Deposit ...	..	..	...	100	0	0		
Miscellaneous ...	1,748	11	9	253	4	9		
	4,883	1	9	735	10	9	..	4,147 7 0
						TOTAL	..	32,363 2 4

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STATEMENT No. 20.

1925. *Investment*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	2,74,200	0	0	2,63,106	3	10
Transfer	500	0	0	500	0	0
TOTAL ..	2,74,700	0	0	2,63,606	3	10

FUNDS.	31st December, 1925, Valuation.			Valuation as per Individual Account.			Less Depreciation on 31st December, 1925.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
*Rs. 16,700/- 3½% Government Loan of 1842-43 @ Rs. 69/- %	11,523	0	0						
*Rs. 1,53,700/- 3½% Government Loan of 1854-55 @ Rs. 69/- %	1,06,053	0	0						
*Rs. 2,800/- 3½% Government Loan of 1865 @ Rs. 69/- %	1,932	0	0						
Rs. 100/- 3½% Government Loan of 1865 @ Rs. 69/- %	69	0	0	2,23,181	13	10	62,894	13	10
*Rs. 4,000/- 3½% Government Loan of 1879 @ Rs. 69/- %	2,760	0	0						
Rs. 4,000/- 3½% Government Loan of 1879 @ Rs. 69/- %	2,760	0	0						
Rs. 51,000/- 3½% Government Loan of 1900-01 @ Rs. 69/- %	35,190	0	0						
Rs. 40,000/- 3½% Government Loan of 1865 @ Rs. 69/- %	27,600	0	0	38,025	0	0	10,425	0	0
Rs. 500/- 3½% Government Loan of 1896 @ Rs. 59/4/- %	296	4	0	500	0	0	203	12	0
PENSION FUND.									
Rs. 1,400/- 3½% Government Loan of 1865 @ Rs. 69/- %	966	0	0	1,399	6	0	433	6	0
BARCLAY FUND.									
Rs. 400/- 3½% Government Loan of 1854-55 @ Rs. 69/- % and ... . Rs. 100/- 3½% Government Loan of 1900-01 @ Rs. 69/- %	345	0	0	500	0	0	155	0	0
TOTAL ...	1,89,494	4	0	2,63,606	3	10	74,111	15	10

* Investments of Permanent Reserve.

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STATEMENT No. 20.

Account. *1925.*

Cr.

	Rs.	As.	P.	Rs.	As.	P.
Balance as per Balance Sheet ..	2,74,700	0	0	1,89,494	4	0
Less Depreciation, Revaluation on 31st December, 1925				74,111	15	10
TOTAL ..	2,74.700	0	0	2,63,606	3	10

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STATEMENT No. 21.

1925. *War Bond*

Dr.

	Rs. As. P.	Rs. As. P.
To Balance from last Account	65,000 0 0	66,359 15 10
To Appreciation W.B. revalued on 31st December, 1925	..	1,309 3 2
TOTAL ..	65,000 0 0	67,669 3 0

FUNDS.	31st December, 1925, Valuation.			Valuation as per War Bond Account.			Appreciation on 31st December, 1925.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Rs.35,000/- 5½% W. Bonds of 1928 @ Rs. 105/6/-	36,881	4	0	35,572	0	10	1,309	3	2
TOTAL Rs. ...	36,881	4	0	35,572	0	10	1,309	3	2

STATEMENT No. 22.

1925. *Cash*

Dr.

	Rs. As. P.	Rs. As. P.
Asiatic Society of Bengal	23,430 0 2	
Oriental Publication Fund No. 1 ..	9,005 13 6	
Oriental Publication Fund No. 2 ..	6,000 0 0	
Sanskrit MSS. Fund Account	6,800 0 0	
Indian Science Congress Fund	4,608 3 0	
Barclay Memorial Fund	14 12 0	
Servants' Pension Fund	49 0 0	
Anthropological Fund	14 10 7	
Provident Fund Account	1,880 6 0	
Personal Account	26,918 4 6	
War Bond Account	30,787 15 0	
Publication Fund Account	43,436 0 11	
Balance as per Balance Sheet	4,339 10 1	
		1,57,284 11 9
TOTAL ..		1,57,284 11 9

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STATEMENT No. 21.

Account *1925.*

Cr.

	Face Value. Rs. As. P.	Market Price. Rs. As. P.
By Sale Proceeds of 5½% W.B. of 1928 face value Rs. 25,000	25,000 0 0	25,747 13 0
By Sale Proceeds of 6% W.B. of 1926 face value Rs. 5,000	5,000 0 0	5,040 2 0
By Balance as per Balance Sheet ..	35,000 0 0	36,881 4 0
TOTAL ..	65,000 0 0	67,669 3 0

STATEMENT No. 22.

Account. *1925.*

Cr.

	Rs. As. P.	Rs. As. P.
Asiatic Society of Bengal	61,681 9 4	
Oriental Publication Fund No. 1 ..	54,321 15 3	
Oriental Publication Fund No. 2 ..	3,483 10 0	
Sanskrit MSS. Fund Account	13,430 4 6	
Arabic and Persian MSS. Fund ..	3,961 14 0	
Indian Science Congress Fund ..	5,364 6 6	
Personal Account	353 14 0	
Fixed Deposit	432 1 10	
Investment Account	500 0 0	
Publication Fund Account	577 2 0	
		1,44,106 13 5
By Balance as per Balance Sheet		13,177 14 4
TOTAL ..		1,57,284 11 9

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STATEMENT No. 23.

1925. *Balance*

LIABILITIES.

	Rs. As. P.	Rs. As. P.
Asiatic Society of Bengal	2,18,530 3 0	
Oriental Publication Fund No. 1 ..	2,025 0 3	
Do. do. No. 2 ..	14,530 14 6	
Sanskrit MSS. Fund Account	15,031 5 3	
Indian Science Congress Account ..	4,658 2 11	
Barclay Memorial Fund	651 6 10	
Servants' Pension Fund	1,857 11 10	
Building Fund	13,602 6 6	
Catalogue of Scientific Serial Publication, Calcutta	415 0 0	
International Catalogue of Scientific Literature	4,424 7 8	
Akbarnama Reprint	7,764 10 8	
Provident Fund Account	1,880 6 0	
Publication Fund Account	39,083 13 5	
Cash Account, overdraft Imperial Bank ..	4,339 10 1	
	3,28,795 2 11	
Less—Depreciation, Difference of Depreciation of Investment Account and Fixed Deposit Account and the Appreciation of War Bonds (Rs 74,111-15-10+Rs. 45-15-8)—Rs. 1,309-3-2	72,848 12 4	2,55,946 6 7
TOTAL ..		2,55,946 6 7

We have examined the above Balance Sheet and the appended detailed Accounts with the Books and Vouchers presented to us and subject to our letter of even date to the Committee, we certify that they are in accordance therewith, and set forth correctly the position of the Society as at 31st December, 1925.

(*Sd.*) PRICE, WATERHOUSE, PEAT & CO., *Auditors,*
Chartered Accountants.

CALCUTTA,
January 29th, 1926.

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STATEMENT No. 23.

Sheet. *1925.*

ASSETS.

	Rs. As. P.	Rs. As. P.
Investments	.. 1,89,494 4 0	
War Bonds	.. 36,881 4 0	
Fixed Deposit	.. 12,459 10 0	
Personal Account	.. 4,147 7 0	
Arabic and Persian MSS. Fund	.. 12,963 13 7	
		2,55,946 6 7

TOTAL ..	2,55,946 6 7

(*Sd.*) SUNDER LAL HORA,
Honorary Treasurer.

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[APPENDIX IV.]

Abstract of the Proceedings of the Council, 1925.

(Rule 48f.)

BARCLAY MEMORIAL PRIZE—

Minutes and recommendations of the Barclay Memorial Medal Committee Meeting of January 8th, 1925. Resolved that the recommendations of the Barclay Memorial Medal Committee be adopted and the Medal for the year 1923 be awarded to Lieut.-Col. S. R. Christophers.
No. 6. 28-1-25.

Constitution of the Barclay Memorial Medal Committee for the year. Proposal by the Biological Secretary to appoint Major R. B. S. Sewell (Nat. Hist. Secy.) *ex-officio*, Mr. G. H. Tipper, Dr. P. J. Brühl, Dr. U. N. Brahmachari and Major H. W. Acton (or the present Medical Secretary, if Major Acton is not back) as members of the Barclay Memorial Medal Committee. Accept Biological Secretary's proposal.
No. 8. 26-10-25.

Minutes of the Barclay Memorial Medal Committee of 3rd December, 1925:—

The Committee unanimously recommends to the Council that the Barclay Memorial Medal for the year 1925 be awarded to Lt.-Col. J. Stephenson, I.M.S., for his research-work in zoology and his work for the advancement of zoological education in India.

The Committee also suggests to the Council of the Asiatic Society that the Medal should be formally presented at the General Meeting of the Society, held in February, to the recipient himself, if present, or in his absence, to some responsible and senior officer of the service to which the recipient belongs. Confirmed.
No. 6. 21-12-25.

BIBLIOTHECA INDICA—

Mr. W. W. Winfield's Kui Grammar. Accept for publication in the Bibliotheca Indica; remuneration Rs 1,000.
No. 21. 25-3-25

Request by Sir George Grierson for authority to destroy used slips from which his Kashmiri Dictionary was set up. Authorise destruction.
No. 16. 25-3-25.

Presentation by Sir George Grierson of two press-copies of Kashmiri texts, and suggestion to publish them in the Bibliotheca Indica. Accept with thanks; both works to be published in the Bibliotheca Indica.
No. 17. 25-3-25.

Proposals from Mr. Muqtadir regarding the Haft-i-qlim. Request Mr. Muqtadir to submit sufficient MS., press-ready, with notes, for a second fascicle, and approve of association of Mr. A. H. Harley as editor.
No. 19. 25-3-25.

Proposal from Prof. W. Caland for the publication of the Vaikhanasa Sutras. Accept. Ask for text and translation. Remuneration Rs. 3 per page for translation.
No. 18. 25-3-25.

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Letter from Mr. A. H. Harley in connection with the edition of the Haft-i-qlim. Proposals accepted, including revision of notes in the first fascicle.
No. 7. 27-7-25.

The issue of the necessary MSS. to Mr. B. De to continue his edition of the Tabaqat-i-Akbari. Resolved to issue the MSS. needed for the edition without legal bond and to accept his offer to complete translation and edition.
No. 8. 27-7-25.

Memorial Volume of the Bibliotheca Indica Mr. van Manen to be authorised to open correspondence, and to prepare and collect materials for a Memorial Volume of the Bibliotheca Indica as its 250th published work.
No. 16. 31-8-25.

Proposal regarding Majma-ul-Bahrain. Accept for publication in the Bibliotheca Indica, with remuneration, Professor Mahfuzul Huq's edition of the text, with translation and notes.
No. 17. 31-8-25.

BUILDING—

Report on re-building of the boundary wall. Accept estimate of Rs. 1,645 from Mr. J. C Banerjee.
No. 2. 27-5-25.

Building proposals. Resolved to accept the principle of leasing out portions of the compound for building purposes. Details to be settled by a Committee consisting of the President, Treasurer, General Secretary, Mr. C. W. Gurner, Dr. W. A. K. Christie, and Mr. G. H. Tipper.
No. 14. 27-7-25.

COMMITTEES—

Committees for 1925. The various Committees for 1925 to be constituted as follows:—

Finance Committee:
President.
General Secretary.
Treasurer.
Mr. P. C. Mahalanobis.
MM. H. P Shastri.
Mr. C. W. Gurner.
Mr. K. C. Mahindra.

Library Committee:
President.
General Secretary.
Treasurer.
Library Secretary.
Mr. C. W. Gurner.

Philological Committee:
President.
General Secretary.
Treasurer.
MM. H. P. Shastri.
Jt. Philological Secretary.
Dr. S. K. Chatterji.
Dr. B. C. Law.
Prof. M. Mahfuzul Huq.
Mr. W. Ivanow.
Prof. Nilmoni Chakravarty.
(The Committee to supervise the work on the Bibliotheca Indica.)

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Publication Committee :
President.
General Secretary.
Treasurer.
Philological
Jt. Philological
Biological
Physical Science
Anthropological
Medical
Library
} Secretaries.

The old Committees remain in being from the Annual Meeting till the appointment of the new Committees, with the exception of the *ex-officio* members, President, General Secretary and Treasurer, in all Committees, and the Sectional Secretaries who are *ex-officio* members of the Publication and Library Committees.
No. 5. 25-2-25.

On a proposal of the President, it was resolved to co-opt Mr. J. C. Mitra as a member of the Finance Committee.
No. 25. 25-3-25.

Consideration of Sir Asutosh Mukherjee and Dr. Annandale Memorials.

(*a*) Sir Asutosh Mukherjee Memorial: Marble bust. Committee to arrange details and submit definite proposals, to consist of Sir Deva Prasad Sarbadhikari, Dr. C. V. Raman, Mr. P. N. Banerjee.
(*b*) Dr. Annandale Memorial: Tablet and photograph, and in addition a Prize, Medal or Lectureship. Committee to arrange details and submit definite proposals, to consist of Dr. W. A. K. Christie, Dr. Baini Prashad, and Dr. S. L. Hora.
No. 10. 24-6-25.

Elliott Prize. A committee, consisting of Messrs. G. H. Tipper, W. A.K. Christie, H. E. Stapleton, H. P. Shastri and the General Secretary, to arrange for necessary action for the current year and to make recommendations to Council.
No. 4. 18-9-25.

Recommendations, Elliott Prize Committee of 23-10-25.
Resolved to recommend to the President that the annual notification as modified be circulated to the Trustees for approval and publication in the *Calcutta Gazette* (in this instance through the Director of Public Instruction, Bengal), and in the *Bihar and Orissa Gazette*, as soon as possible, after the 1st of January, 1926.
Confirmed.
No. 12. 26-10-25.

DONATIONS—

Letter from Mr. W. K. Dods, offering a cheque for Rs. 1,000 as a gift to the Society to be used for binding and preservation of the Society's books and manuscripts. Accept with thanks.
No. 4. 25-3-1925.

Donation from MM. Haraprasad Shastri. Resolved to place on record the Council's thanks to MM. Haraprasad Shastri for his donation during the previous years of Rs. 18,000 to the Society in aid of the printing of his Catalogue of Sanskrit MSS. in the Government Collection.
No. 22. 25-3-25.

Offer of Count K. Ohtani to present a MSS. reproduction camera to the Society. Accept with thanks.
No. 4. 26-10-25.

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EXCHANGE—

Journal of the Indian Chemical Society. Exchange Journal.
No. 6. 25-2-25.

Finnish Zoological-Botanical Journal. Exchange Journal.
No. 12. 25-3-25.

Kashmiri Archæological Publications. Exchange Journal. (For two years only.)
No. 13. 25-3-25.

Manchuria Research Society. Exchange Journal and Memoirs.
No. 12. 29-4-25.

Linguistic Society of America. Exchange Journal.
No. 7 (*a*). 24-6-25.

Botanic Garden, Tiflis. Exchange Journal.
No. 7 (*b*). 24-6-25.

Forschungsinstitut für Osten und Orient. Exchange Journal.
No. 7 (*c*). 24-6-25.

FELLOWS—

Minutes and recommendations, Meeting of Fellows, 6th January, 1925. Resolved to adopt the recommendations: Messrs. G. E. Pilgrim, C. V. Raman and M. Hidayat Hosain to be the Council's Candidates for election to Ordinary Fellowship in the Annual Meeting.
No. 5. 28-1-25.

Resignation of Mr. H. Beveridge. Unanimously resolved to recommend Mr. Beveridge for Honorary Fellowship.
No. 6. 27-7-25.

The Fellowship regulations. Sub-Committee to be formed consisting of such members of Council as are Fellows, together with the General Secretary as a co-opted member. The senior Fellow to convene the meetings.
No. 9. 21-8-25.

Recommendations, Fellowship Election Regulations Committee. Accept; re-arrange Regulation No. 13 as No. 1.
No. 10. 26-10-25.

(For Regulations regarding the Election of Fellows, see page clii.)

FINANCE—

Recommendation, Finance Committee, No. 4 (2), 26-1-25. Transfer of O.P.F. reserve to Publication Fund. Order: Open new account early in the year paying off all outstandings, transferring total balance.
No. 7. 28-1-25.

Recommendation, Finance Committee, No. 4*a*, 14-11-25. Conversion of Entrance fees. Resolved that receipts for entrance fees and compounding fees destined for the Permanent Reserve Fund be invested annually, without conversion of old investments.
No. 6. 16-11-25.

Recommendation, Finance Committee No. 3 (7), 23-2-25, regarding MM. Shastri's allowance. Order: Recommend to Council that the monthly allowance of Rs. 300 sanctioned by the Government of Bengal for MM. Haraprasad Shastri, be paid to him with retrospective effect from July, 1924.
No. 11. 25-2-25.

Recommendation, Finance Committee, No. 3 (4), 23-3-26, regarding payment of Rs. 2,400 to MM. H. P. Shastri. Confirmed. Further resolved to thank MM. H. P. Shastri for his donation to the Society

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in aid of the printing of his catalogue of Sanskrit MSS. in the Government Collection.
No. 22. 25-3-25.

Recommendation, Finance Committee, No. 4, 27-4-25. Certificate of accounts for 1924 by the Auditors, and their covering letter. Order: Record. Further recommended that the card register of membership be completely revised and checked in the first week of each quarter; that all changes in status, residence, subscriptions and membership be at once entered in the personal account book on receipt of notice, with date of effect; that quarterly an abstract of membership under the various headings be prepared for submission to the accountants at the end of the year. Confirmed.
No. 11. 29-4-25.

Recommendation, Finance Committee, No. 4 (5), 26-1-25. Opening of separate bank account for staff Provident Fund. Confirmed.
No. 7. 28 1-25.

Recommendation, Finance Committee, No. 3 (8), 23-2-25. Petition from the widow of the late Pandit Asutosh Tarkatirtha. Order: Recommend to Council that a gratuity of between Rs. 750 and Rs. 1,000 be paid to the petitioner. Order: Gratuity of Rs. 850 to be paid.
No. 8. 25-2-25.

Recommendation, Finance Committee, No. 11, 27-4-25. Arrangements for the Sanskrit Catalogue. Recommended that MM. H. P. Shastri's proposal be accepted. Pandit Aghornath Kavyatirtha to be appointed in place of the late Pandit Asutosh Tarkatirtha. Grade Rs. 60—3—90, initial pay Rs. 66 with effect from January 1st. Confirmed.
No. 11. 29-4-25.

Recommendation, Finance Committee, No. 12, 27-4-25. Remuneration to Babu Premananda Gupta for supervision of the introduction of a new system of book-keeping in Society's accounts. Recommended that Rs. 60 be paid. Confirmed.
No. 11. 29-4-25.

Recommendation, Finance Committee, No. 4, 22-10-25. Report on binding expenditure. Resolved to recommend a supplementary budget grant of Rs. 250 for the current year. Confirmed.
No. 13. 26-10-25.

Recommendation, Finance Committee, No. 10, 27-4-25. Claims by Sanskrit press. Order: Alleged liabilities to be repudiated.
No. 7. 29-4-25.

GRANTS—

Renewal of Annual Grant of Rs. 3,000 from the Bengal Government, O.P.F. II. Record. Council's thanks to be conveyed to Government.
No. 7. 25-3-25.

Annual Grant of Rs. 5,000 for the collection, etc., of Persian and Arabic MSS.

Letter from the Secretary, Department of Education, Health and Lands, Government of India, renewing the annual grant for five years, with retrospective effect from the 1st April, 1924. Convey Council's thanks to Government.
No. 2. 16-11-25.

KAMALA LECTURESHIP—

Letter from the Registrar, Calcutta University, requesting nomination by the Asiatic Society of Bengal of a member of the Committee of

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Selection for the Kamala Lectureship. MM. Haraprasad Shastri to be the Council's nominee.
No. 8. 25-3-25.

LECTURES—

Mr. G. H. Tipper's suggestion regarding general lectures. Principle of holding general lectures by the Society accepted. Committee consisting of Messrs. R. B. S. Sewell, G. H. Tipper and the General Secretary to make recommendations.
No. 8. 8-9-25

Recommendations, General Lectures Committee of 16-10-25.

Unanimously resolved to recommend to Council the adoption of a set of regulations regarding the general lectures. Confirmed.

(For Regulations regarding general lectures see page cliv.)

LIBRARY—

Proposal to subscribe to the Acta Orientalia. Subscribe.
No. 7. 25-2-25.

The question of non-Members entering the MS. rooms. No non-Member to be admitted to the MS. rooms without permission of the General Secretary.
No. 5. 24-6-25.

MANUSCRIPTS—

Report on the recovery of a missing copy of the Haft-i-qlim. Office to keep two books, one for Persian and Arabic, the other for Sanskrit and Pali MSS.; in these, the title, date of issue and date of return of all MSS. lent to be shown. The books together with a list of outstandings, to be submitted to Council every month.
No. 5. 27-5-25.

On a proposal by the Jt. Philological Secretary, resolved to commission Mr. W. Ivanow to take up the cataloguing of the Arabic MSS. in the Society's collection on termination of his work on the Persian MSS.
No. 17. 26-10-25.

Resolved: That Mr. Ivanow's appointment to catalogue the Arabic MSS. in the Society's collection to be on the same terms as those of the previous appointment dated 25-6-24.
Supplement to No. 17. 26-10-25.

MISCELLANEOUS—

Letter from the Faraday Society inviting the Society to join as a Corporate Member. The Society to join as a corporate member.
No. 9. 31-8-25.

PRESENTATIONS—

Presentation of Word Index, Lalitavistara, and MS. of Shalihotra by MM. Haraprasad Shastri. Accept with thanks.
Nos. 5 and 6. 25-3-25.

PUBLICATIONS—

Recommendation, Publication Committee, No. 1, 28-1-25, regarding the reprint of Suryasiddhanta. Order: Reprint. Resolved: That Mr. B. L. Mitter be requested to advise generally on the question of copyright with reference to future publications. Confirmed. Council.
No. 9. 28-1-25.

Prof. Shafaat Khan's proposals in the matter of the publication of the Journal of Indian History. Decline.
No. 10. 25-2-25.

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Retirement of Mr. C. H. Harvey, Superintendent of the Baptist Mission Press. Resolution expressing appreciation of Council to be forwarded to Mr. Harvey.
No. 5. 31-8-25.

Subscriptions to Memoirs. Abolish acceptance of advance subscriptions for complete volumes.
No. 15. 31-8-25.

MS. catalogue of Tibetan printed works and MSS. Principle of publication accepted.
No. 5. 18-9-25.

REQUESTS—

Request from the Punjab Vedic Pustakalaya, Lahore, for the free supply of Society's publications. Decline.
No. 5. 29-4-25.

Request, from Mr. R. P. Chanda to be allowed to take photographs and estampages of a Kharoshti Inscription. Action approved.
No. 15. 29-4-25.

Permission granted to the Offg. Superintendent of the Archæological Section, Indian Museum, to take a photograph of the Sue Bihar Copper-plate inscription, and receipt of a copy of the photograph. Action approved.
No. 14. 24-6-25.

Permission granted to Mr. N. G. Majumdar to take estampages of five copper-plates. Action approved.
No. 15. 24-6-25.

RULES—

Suggestion, from Major R. Knowles concerning the day suitable for the Society's meetings. Resolved that the Council, in the manner prescribed by the Rules, place before the Society a proposal to alter its Rules in such a manner as to fix the day on which the Society's meetings are held to be Monday instead of Wednesday as at present prescribed.
No. 4. 28-1-25.

Fixing day for Council Meetings. Last Monday of the month.
No. 4. 24-6-25.

STAFF—

Resolved that the security deposit of the ex-Cashier be credited to the Permanent Fund of the Society.
No. 11. 25-2-25.

On a proposal of the President, it was resolved that the appointment of an additional clerk be sanctioned to be specially charged with the work of putting old files in order. Initial pay Rs. 50; after confirmation Rs. 60 in the grade of 50—3—80.
No. 18. 25-2-25.

Recommendation of the Finance Committee of the appointment of a Head Clerk on Rs. 150—10—250. Confirmed.
No. 8. 21-12-25.

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List of

Officers, Council Members, Members, Fellows and Medallists

of the

Asiatic Society of Bengal.

31st December, 1925.

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OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL FOR THE YEAR 1925.

President.

Sir Rajendra Nath Mookerjee, K.C.I.E., K.C.V.O.

Vice-Presidents.

The Hon'ble Mr. Justice W. E. Greaves, Kt, Bar.-at-Law.
Sir Devaprasad Sarbadhikari, Kt., C.I.E., M.A., B.L., L.L.D.
C. V. Raman, Esq., M.A., D.Sc., F.R.S.
Major H. W. Acton, M.R.C.S., L.R.C.P., I.M.S.

Secretaries and Treasurer.

General Secretary:—Johan van Manen, Esq.
Treasurer:—Baini Prashad, Esq., D.Sc [1]
Philological Secretary:—Mahamahopadhyaya Haraprasad Shastri, C.I.E., M.A., F.A.S.B.
Joint Philological Secretary:—Shamsu'l 'Ulamā' Mawlawi M. Hidāyat Hosain, Khan Bahadur, Ph.D., F.A.S.B.
Natural History Secretaries. { Biology:—Sunder Lal Hora, Esq., D.Sc.[2] / Physical Science:—W. A. K. Christie, Esq., B.Sc., Ph.D., M.Inst.M.M., F.A.S.B.
Anthropological Secretary:—P. C. Mahalanobis, Esq., M.A., B.Sc.
Medical Secretary:—Major R. Knowles, M.R.C.S., L.R.C.P., I.M.S.
Library Secretary:—G. H. Tipper, Esq., M.A., F.G.S., M.Inst.M.M., F.A.S.B.

Other Members of Council.

Rai Upendra Nath Brahmachari, Bahadur, M.D., M.A., Ph.D., F.A.S.B.
C. W. Gurner, Esq., B.A., I.C.S.[3]
B. L. Mitter, Esq., M.A., B.L., Bar.-at-Law.
P. J. Brühl, Esq., I.S.O., D.Sc., F.C.S., F.G.S., F.A.S.B.[4]
A. H. Harley, Esq, M.A.
Pramatha Nath Banerjee, Esq., M.A., B.L.

APPOINTMENTS AND TRANSFERS DURING THE YEAR.

Major R. B. S. Sewell (Biological Secretary), from 3-8-25 vice Dr. S. L. Hora.
Dr. Sunder Lal Hora (Treasurer), from 3-8-25 vice Dr. Baini Prashad.
H. E. Stapleton, Esq. (Council Member), from 2-9-25 vice Dr. P. Brühl.
Lt. Col. J. W. D. Megaw (Acting Vice-President), from 27-5-25 to 16-11-25; *vice* Major H. W. Acton.
Rai U. N. Brahmachari, Bahadur (Acting Medical Secretary), from 27-5-25 to 16-11-25; *vice* Major R. Knowles.
Dr. W. A. K. Christie (Acting General Secretary), from 15-5-25 to 9-6-25; *vice* John van Manen, Esq.
Johan van Manen, Esq. (Acting Treasurer), from 31-8-25 to 1-11-25; *vice* Dr. Sunder Lal Hora.

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[1] Resigned 3-8-25.
[2] Transferred 3-8-25.
[3] Resigned 16-11-25.
[4] Resigned 2-9-25.

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OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL ELECTED FOR THE YEAR 1926.

President.

G. H. Tipper, Esq., M.A., F.G.S., M.Inst.M.M., F.A.S.B.

Vice-Presidents.

Sir R. N. Mookerjee, K.C.I.E., K.C.V.O.
Sir Devaprasad Sarbadhikari, Kt., C.I.E., M.A., B.L., L.L.D.
Rai Upendra Nath Brahmachari, Bahadur, M.D., M.A., Ph.D., F.A.S.B.
Major H. W. Acton, M.R.C.S., L.R.C.P., I.M.S.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq.
Treasurer :—Sunder Lal Hora, Esq., D.Sc.
Philological Secretary :—Mahamahopadhayaya Haraprasad Shastrī, C.I.E., M.A., F.A.S.B.
Joint Philological Secretary :—Shamsu'l 'Ulamā Mawlawī Hidayat Hosain, Khan Bahadur, Ph.D., F.A.S.B.
Natural History Secretaries.
- Biology :—Major R. B. S. Sewell, M.A., M.R.C.S., L.R.C.P., F.L.S., F.Z.S., I.M.S., F.A.S.B.
- Physical Science :—C. V. Raman, Esq., M.A., D.Sc., F.R.S., F.A.S.B.

Anthropological Secretary :—H. E. Stapleton, Esq., B.A., B.Sc., I.E.S.
Medical Secretary :—Major R. Knowles, B.A., M.R.C.S., L.R.C.P., I.M.S.
Library Secretary :—Lt.-Col. N. F. Barwell, M.C., M.A., Barrister-at-law.

Other Members of Council.

The Hon'ble Mr. Justice C. C. Ghose, Kt., Barrister-at-Law.
Percy Brown Esq., A.R.C.A.
B. L. Mitter, Esq., M.A., B.L., Barrister-at-Law.
Suniti Kumar Chatterji, Esq., M.A., D.Lit. (London).
P. C. Mahalanobis, Esq., M.A., B.Sc.
Pramatha Nath Banerjee, Esq., M.A., B.L.

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LIST OF ORDINARY MEMBERS.

R.=Resident. N.R.=Non-Resident. A.=Absent. L.M.=Life Member.
F.M.=Foreign Member.

An Asterisk is prefixed to the names of the Fellows of the Society.

Date of Election.		
1925 May 6.	N.R.	Abbasi, Mohammad Amin, Special Arabic Lecturer, Chittagong Madrassah. *Chittagong.*
1922 April 5.	R.	Abdul Ali, Abul Faiz Muhammad, M.A., M.R.A.S., F.R.S.L. 3, *Turner Street, Calcutta.*
1909 Mar. 3.	R.	Abdul Latif, Saiyed, Khan Bahadur, B.A., B.L., Asst. Secretary to the Government of Bengal, Revenue Dept., Writers' Buildings, Calcutta. 32/1, *Upper Circular Road, Calcutta.*
1894 Sept. 27.	L.M.	Abdul Wali, Khan Sahib. 3, *Alimuddin Street, Calcutta.*
1925 Nov. 2.	N.R.	Acharya, Paramananda, B.Sc., Archæological Scholar. *Mayurbhanj State, P.O. Baripada.*
1921 Mar. 2.	R.	Acton, Major Hugh William, M.R.C.S., L.R.C.P. (Lond.), I.M.S. *School of Tropical Medicine and Hygiene, Central Avenue, Calcutta.*
1925 Dec. 7.	N.R.	Afzal, Syed Mohamad, Khan Bahadur, Offg. Civil Surgeon, Bihar and Orissa Medical Service. *P.O. Mahendru, Patna.*
1921 Mar. 2.	R.	Agharkar, Shankar Purushottam, M.A., Ph.D., F.L.S., Professor of Botany, Calcutta University. 35, *Ballygunge Circular Road, Calcutta.*
1915 Feb. 3.	N.R.	Ahmad Ali Khan, Hafiz, Controller of Household. *Rampur State, U.P.*
1917 June 6.	N.R.	Aiyangar, K. V. Rangaswami, Rao Bahadur, M.A., Principal, H.H. The Maharajah's College. *Trivandrum, Travancore.*

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Date of Election.		
1925 April 1.	R.	Aiyer, Rishiyur Sundara Venkatarama, B.A., B.L., Secretary, Reform Flour Mills, Ltd. *Howrah.*
1920 Jan. 7.	N.R.	Aiyer, S. Paramesvara, M.A., B.L., M.R.S.L., M.F.L.S., M.E.I.A., Kavitilaka, Secretary to the Government of Travancore. *Trivandrum, Travancore, South India.*
1923 April 4.	R.	Alker, A. 4, *Bankshall Street, Calcutta.*
1919 July 2.	R.	Amin-ul-Islam, Nawabzada, Khan Bahadur, B.L., Inspector-General of Registration. *Bengal.*
1912 July 3.	N.R.	Andrews, Egbert Arthur, B.A. *Tocklai Experimental Station, Cinnamara P.O., Jorhat, Assam.*
1924 Nov. 5.	R.	Asaduzzaman, Khan Bahadur, Assistant Secretary to the Government of Bengal. 42, *Beniapukur Road, Entally, Calcutta.*
1911 May 3.	R.	Atkinson, Albert Charles. *La Martinière,* 11, *Loudon Street, Calcutta.*
1904 July 6.	N.R.	Aulad Hasan, Saiyed, Khan Bahadur. *Rajar Deori, Dacca.*
1924 Mar. 5.	R.	Austin, J. Mein. 4, *Clive Row, Calcutta.*
1917 April 4.	N.R.	Awati, P. R., M.A., Medical Entomologist, Central Research Institute. *Kasauli.*
1914 Mar. 4.	L.M.	Bacot, J. 31, *Quai d'Orsay, Paris.*
1924 April 2.	N.R.	Bahl, K. N., Professor of Zoology, Lucknow University. *Badshabagh, Lucknow.*
1924 Nov. 5.	N.R	Baidil, A. Mannan, Lecturer in Persian and Urdu. *New College Hostel, P.O. Moradpore (Patna).*
1919 April 2.	R.	Bal, Surendra Nath, Ph.C., M.Sc., F.L.S., Curator, Industrial Section, Indian Museum. 1, *Sudder Street, Calcutta.*
1920 Mar. 3.	R.	Ballardie, J. H. de Caynoth, A.R.I.B.A. 7, *Old Court House Street, Calcutta*
1925 April 1.	R.	Banerjee, Abhaya Charan, M.A., Deputy Chief Engineer, Telegraphs. 27*A*, *Ballygunge Circular Road, Calcutta.*
1925 Mar. 4.	R.	Banerjee, Abinash Chandra, Rai Bahadur, M.A., M.L.C. 8*B*, *Lall Bazar, Calcutta.*
1925 Jan. 7.	R.	Banerjee, M. N., C.I.E., B.A., M.R.C.S. 32, *Theatre Road, Calcutta*
1918 Feb. 6.	N.R.	Banerjee, Narendra Nath, M.I.P.O.E.E. (Lond.), A.M.I.E. (Ind.), Divisional Engineer, Telegraphs. *Mandalay, Burma.*

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Date of Election.		
1924 Mar. 5	R.	Banerjee, P. N., M.A. (Cantab.), A.M.I.E. 6 & 7, *Clive Street, Calcutta.*
1922 April 5.	N.R.	Banerjee, Sasadhar, B.A., B.Ed., Head Master. Gait H E. School. *Aurangabad P.O., Gaya.*
1905 Mar. 1.	R.	Banerji, Muralidhar. *Sanskrit College, College Square, Calcutta.*
1919 July 2.	R.	Banerji, Pramathanath, M.A., B.L., 9, *Mullick Lane, Bhowanipur, Calcutta.*
1907 Jan. 2.	R.	Banerji, Rakhal Das, M.A. 65, *Simla Street, Calcutta.*
1925 May 6.	R.	Baral, Gokul Chandra. 8, *Hidaram Banerjee's Lane, Calcutta.*
1923 Feb. 7.	R.	Barber. Cecil Thomas, Asst. Supdt., Geological Survey of India. *Indian Museum, Calcutta.*
1921 May 4.	R.	Barnardo, Col. F. A. F., C.B.E., C.I.E., M.D., F.R.C.S., F.R.C.P., I M.S., Principal, Medical College. *Calcutta.*
1898 Mar. 2.	N.R.	Barnes, Herbert Charles, M.A. (Oxon.), C.I.E. *Gauhati, Assam.*
1921 Dec. 7.	R.	Barua, B. M., Lecturer, Calcutta University. 4, *Herambi Charan Das's Lane, off Machuabazar Street, Calcutta.*
1923 Dec. 5.	R.	Barwell, Lt.-Col. N. F., M.C., M.A., Bar.-at-Law. *Bishop's House*, 51, *Chowringhee, Calcutta.*
1918 July 3.	R.	Basu, Charu Chandra, B.A., M.B., Prof. of Pathology, Carmichael Medical College. 52/2, *Mirzapur Street, Calcutta.*
1924 Mar. 5.	R.	Basu, D. N., Bar-at-Law. 14, *Balaram Ghose Street, Calcutta.*
1924 Dec. 3.	R.	Basu, Jatindra Nath, M.A., M.L.C. 14, *Balaram Ghose Street, Calcutta.*
1925 July 6.	R.	Basu, Manmath Mohan, M.A., Professor, Scottish-Churches College. 19, *Gokul Mitra Lane, Hatkhola P.O., Calcutta.*
1925 May 6.	F.M.	Batra, Major Hargobind Lal, M.C., I.M.S. *C/o Messrs. Grindlay & Co.*, 54, *Parliament Street, London, S.W.* 1.
1909 July 7.	N.R.	Bazaz, Rangnath Khemraj, Proprietor, Shri Venkateshwar Press. 7*th Khetwadi, Bombay No.* 4.
1895 July 3.	L.M.	Beatson-Bell, Rev Sir Nicholas Dodd, K.C.S.I., K.C.I.E., Edgeclisse, St. Andrews. *Scotland.*
1915 April 7.	N.R.	Belvalkar, Sripad Krishna, M.A., Ph.D., Prof. of Sanskrit, Deccan College. *Poona.*

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Date of Election.		
1925 Mar. 4.	R.	Benthall, E. C. 37, *Ballygunge Park, Calcutta.*
1909 April 7.	R.	Bentley, Charles A., M.B., D.P.H. *Writers' Buildings, Calcutta.*
1925 May 6.	R.	Bery, Atma Ram. 43, *Ripon Street, Calcutta.*
1917 Aug. 1.	R.	*Bhandarkar, Devadatta Ramkrishna, M.A. 35, *Ballygunge Circular Road, Calcutta.*
1923 June 6.	N.R.	Bhanot, Kali Das, Superintendent, Forests, Jubbal State. *P.O., Chopal, via Simla.*
1925 Mar. 4.	N.R.	Bhatnagar, Jagmohan Lal, M.A., Professor of History, Randhir College. *Kapurthala.*
1909 July 7.	R.	Bhattacharji, Shib Nath, M.B. 80, *Shambazar Street, Calcutta.*
1908 Nov. 4.	R.	Bhattacharya, Bisvesvar, B.A., M.R.A.S., B.C.S. 16, *Townshend Road, Bhowanipore, Calcutta.*
1922 Feb. 1.	N.R.	Bhattacharya, Vidhushekhara, Principal, Vidyabhavana, Visvabharati. *Santiniketan, Birbhum.*
1924 May 7.	L.M.	Bhattacharyya, Binayatosh, M.A., Ph.D., Librarian, Oriental Collections, Baroda State. *Baroda.*
1922 June 7.	R.	Bhattacharyya, Sivapada, M.D. *School of Tropical Medicine and Hygiene, Calcutta.*
1925 Feb. 4.	N.R.	Bhor, Shyam Chand, Accountant. *Bhopal Chowk, Bhopal.*
1923 May 2.	R.	Bhukhanvala, R. M. A. 10, *Canning Street, Calcutta.*
1925 Feb. 4.	R.	Bishop, Thomas Henry, M.R.C.S., L.R.C.P., D.P.H., Chief Medical Officer, E.B. Ry. 2, *Belvedere Park, Alipore.*
1923 Aug. 1.	R.	Biswas, Kalipada, M.A., Botanical Laboratory, College of Science. 35, *Ballyganj Circular Road, Calcutta.*
1922 Dec. 6.	N.R	Blackett, Sir Basil Phillot, K.C.B., Finance Member, Government of India. *Delhi.*
1893 Feb. 1.	L.M.	Bodding, Revd. P. O. *Mohulpahari, Santal Parganas.*
1912 July 3.	R.	Bomford, Capt. Trevor Lawrence, M.B., B.S., M.R.C.S., L.R.C.P., I.M.S. *Eden Hospital, Calcutta.*
1898 Feb. 2.	R.	Bose, Amrita Lal. 9-2, *Ram Chandra Maitra Lane, Calcutta.*
1925 Feb. 4.	R.	Bose, Debendra Nath. 4*C*, *Paddopukur Road, Bhowanipur, Calcutta.*

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Date of Election.		
1925 May 6.	R.	Bose, H. M., B.A., Bar-at-Law. 177, *Lower Circular Road, Calcutta.*
1895 Mar. 6.	R.	*Bose, Sir Jagadis Chandra, Kt., C.S.I., M.A., D.Sc., C.I.E. *Bose Institute*, 91, *Upper Circular Road, Calcutta.*
1922 Apl. 5.	N.R.	Bose, Jogesh Chandra, Vidyabinode. *Contai, Midnapore.*
1924 Mar. 5.	R.	Bose, S., B.A. 8, *Ram Kishen Das Lane, Amherst Street P.O., Calcutta.*
1917 Oct. 3.	N.R.	Bose, Satyendra Nath, M.Sc., Professor, Dacca University. *Ramna, Dacca.*
1920 Mar. 3.	N.R.	Bosworth-Smith, Percy, F.G.S., M.I.M.M., M.A.I.M.E. *Kolar Gold Fields, Oorgaum P.O., South India.*
1910 July 6.	N.R.	Botham, Arthur William, I.C.S. *Shillong.*
1925 Nov. 2.	R.	Bradshaw, Eric Jean, B.A., B.A.I., F.G S., Assistant Superintendent, Geological Survey of India. 27, *Chowringhee, Calcutta.*
1908 Jan. 1.	R.	*Brahmachari, Upendra Nath, Rai Bahadur, M.A., Ph.D., M.D. 82/3, *Cornwallis Street, Calcutta.*
1920 Feb. 4.	N.R.	Brij Narayan, M.A., F.R.Hist.S., M.R.A.S., Deputy Collector of Military Accts., Western Command and Baluchistan Dist. *Quetta.*
1907 July 3.	A.	*Brown, John Coggin, O.B.E., D.Sc., F.G.S., M I.M.E., M Inst.M.M., M.I.E. (Ind.). *Geological Survey of India*, 27, *Chowringhee, Calcutta.*
1909 Oct. 6.	R.	Brown, Percy, A.R.C.A. *Government School of Arts, Calcutta.*
1924 Mar. 5.	R.	Browne, Capt. H., M B.E., R.I., B.A. 6 & 7, *Clive Street, Calcutta.*
1924 July 2.	F.M.	Browne, L. E. Rev. 21, *The Drive, Northampton, England.*
1909 Oct. 6.	R.	*Brühl, Paul Johannes, I.S.O., D.Sc., F.C.S., F.G.S. 35, *Ballygunge Circular Road, Calcutta.*
1896 Jan. 8.	N.R.	*Burn, Richard, C.I.E., I.C.S., Member Board of Revenue. *Allahabad, U.P.*
1900 May 2.	N.R.	Butcher, Flora, M.D. (Brux.), Tanakpur Medical Mission. *Tanakpur, Rohilkhand and Kumaon Ry., U.P.*
1925 Mar. 4.	R.	Buyers, William Alexander, M.I.C.E., Deputy Chief Engineer, E.I. Ry. *East Indian Railway House, Calcutta.*

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Date of Election.		
1913 Apl. 2.	R.	Calder, Charles Cumming. *Royal Botanic Gardens, Sibpur, Howrah.*
1918 July 3.	R.	Campos, Joachim Joseph, M.B. 16/2, *Royd Street, Calcutta.*
1924 Mar. 5	R.	Carey, Sir Willoughby L. *Chartered Bank Buildings, Calcutta.*
1925 Dec. 7.	R.	Carritt, Stanley Ernest. *C/o Messrs. Thacker, Spink & Co., 3, Esplanade, Calcutta.*
1920 Sept. 1.	R.	Chakladar, Haran Chandra. 28/4, *Sahanagar Lane, Kalighat, Calcutta.*
1909 Mar. 3.	R.	Chakravarti, Nilmani, M.A. *Presidency College, Calcutta.*
1920 Sept. 1.	R	*Chanda, Ramaprasad, B.A. 37*A*, *Police Hospital Road, Calcutta.*
1906 Jan. 3.	R.	Chapman, John Alexander. *C/o The Imperial Library, Calcutta.*
1915 Oct. 27.	F.M.	Chatterjee, Sir Atul Chandra, I.C.S., High Commissioner for India. *India Office, London.*
1911 June 7.	A.	Chatterjee, Karuna Kumar, F.R.C.S. 74, *Dharamtala Street, Calcutta.*
1916 Jan. 5.	R.	Chatterjee, Khagendra Nath, B.A., B.L. 12, *Madan Mohan Chatterjee Lane, Calcutta.*
1920 Sep. 1.	R.	Chatterjee, Nirmal Chandra. 52, *Harish Mukerjee Road, Bhowanipore, Calcutta.*
1924 Dec. 3.	R.	Chatterjee, Sailendra Nath. 9/4, *Badur Bagan Row, Calcutta.*
1924 Mar. 5.	R.	Chatterji, Mohini Mohan, M.A., B.L., President, Incorporated Law Society of Calcutta. 33, *McLeod Street, Calcutta.*
1924 Aug. 6.	R.	Chatterji, Suniti Kumar, M.A., D.Lit. (London), Professor, Calcutta University. 3, *Sukias Row, Calcutta.*
1924 Nov. 5.	R.	Chattopadhyay, K. P 2, *Ramkissen Dass Lane, Badurbagan, Calcutta.*
1925 Nov. 2.	N.R.	Chaṭṭopādhyāya, Kshetreśa Chandra, M.A., Lecturer in Sanskrit, The University. *Allahabad.*
1893 Sept. 28.	R.	*Chaudhuri, B. L., B.A., D.Sc. (Edin.), F.R.S.E., F.L.S. (Lond.). 9*A*, *South Road, Entally P.O., Calcutta.*
1914 April 1.	R.	Chaudhuri, Gopal Das. 32, *Beadon Row, Calcutta.*
1925 Jan. 7.	N.R.	Chaudhuri, Hemanta Chandra. *Sherpur Town P.O. (Mymensingh).*

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Date of Election.		
1925 Mar. 4.	R.	Chaudhuri, J., M.A., LL.B. (Oxon.), Barrister-at-Law. 34, *Ballygunge Circular Road, Calcutta.*
1925 Jan. 7.	N.R.	Chaudhuri, Satyendra Mohan, B.A., B.Sc. *Sherpur Town P.O. (Mymensingh).*
1925 Aug. 3.	N.R.	Chhibber, H. L., Lecturer in Geology, University College. *Rangoon.*
1924 Dec. 5.	R.	Chopra, B. N., Asst. Superintendent, Zoological Survey of India, Indian Museum *Calcutta.*
1922 Feb. 1.	R.	Chopra, Major, R. N., I.M.S., Prof. of Pharmacology, School of Tropical Medicine and Hygiene. *Calcutta.*
1907 July 3.	R.	*Christie, William Alexander Kynoch, B.Sc., Ph.D., M.Inst.M.M. *Geological Survey of India, Calcutta.*
1909 Nov. 3.	N.R	*Christophers, Lt.-Col. Samuel Richard, M.B., C.I.E., O.B.E., I.M.S. *Central Research Institute, Kasauli.*
1915 Sept. 1.	R.	Cleghorn, Maude Lina West, F.L.S., F.E.S. 12, *Alipur Road, Calcutta.*
1923 May 2.	R.	Collenberg, Baron H. Rüdt von, German Consul-General. 2, *Store Road, Calcutta.*
1920 Dec. 1.	R.	Connor, Lieut.-Col. F. P. 2, *Upper Wood Street, Calcutta.*
1924 June 4.	R.	Cooper, H. 18, *Convent Road, Calcutta.*
1925 Aug. 3.	R.	Coyajee, J. C., B.A. (Cantab.), LL.B., I.E.S., Professor, Presidency College. *Calcutta.*
1887 Aug. 25.	R.	Criper, William Risdon, F.C.S., F.I.C. A.R.S.M. *Konnagar, E.I.R.*
1925 Nov. 2.	R.	Crookshank, Henry, Assistant Superintendent, Geological Survey of India. 27, *Chowringhee Road, Calcutta.*
1925 Mar. 4.	R.	Das, Ajit Nath, M.R.A.S. (London), F.Z.S. (London). 24, *South Road, Entally.*
1924 April 2.	R.	Das, Biraj Mohan, M.A. (Cal.), M.Sc. (Lond.), Superintendent, Calcutta Research Tannery. 2/1, *Kirti Mitter Lane, Calcutta.*
1918 April 3	N.R	Das, Jagannath, B.A., Ratnakar, Kavisudhakar. *The Rajsadan, Ajodhya.*
1924 Dec. 3.	R.	Das, Surendra Nath, M.B. 67, *Nimtala Ghat Street, Calcutta.*
1924 Mar. 5.	R.	Das, S. R., Bar.-at-Law, Advocate-General, Bengal. 7, *Hungerford Street, Calcutta.*
1915 Sept. 1.	R.	Das-Gupta, Hem Chandra, M.A., F.G.S., Professor, Presidency College. *Calcutta.*

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Date of Election.		
1922 Sept. 6.	R.	Das-Gupta, Dr. Surendra Nath, Prof. of Sanskrit and Philosophy, Presidency College. 2, *Ritchie Road, Ballygunge.*
1917 April 4.	R.	Datta, Rasik Lal, D.Sc., F.C.S., F.R.S.E. Industrial Chemist, Dept. of Industries, Bengal. 78. *Manicktola St., Calcutta.*
1925 June 3.	R.	Datta, S. K., B.A., M.B., Ch.B. (Edin.), Secretary, National Council Y.M.C.A. 5, *Russell Street, Calcutta.*
1924 Aug. 6.	L.M.	Davies, Major L. M., Royal Artillery, Kohat. *N.W.F.P.*
1924 April 2.	R.	De, F. L., Rai Bahadur. 99, *Grey Street, Calcutta.*
1895 Sept. 19.	L.	De, Kiran Chandra, C.I.E., B.A., I.C.S., Commissioner, Presidency Division, Bengal. 21, *Camac Street, Calcutta.*
1917 June 6.	R.	Deb, Kumar Harit Krishna, M.A., Sovabazar Rajbati. *Raja Navakrishna Street, Calcutta.*
1921 Sept. 7.	R.	Deb, Kumar Profulla Krishna. 106/1, *Grey Street, Calcutta.*
1925 Mar. 4.	R.	Deb, Kshitindra, Raja, Rai Mahasai of Bansberia Raj. 21/*E*, *Rani Sankari Lane, Kalighat, Calcutta.*
1925 Dec. 7.	R.	Derviche-Jones, Lt.-Col. Arthur Daniel, D.S.O., M.C. *United Service Club, Calcutta.*
1910 May 4.	L.M.	Dhavle, Sankara Balaji, I.C.S., District and Sessions Judge. *Cuttack.*
1920 Aug. 4.	N.R.	Dikshit, Kashinath Narayan, M.A., Superintendent, Archæological Survey. *Western Circle, Poona.*
1898 Jan. 5.	R.	Dods, William Kane, Agent, Hongkong and Shanghai Banking Corporation. *Calcutta.*
1902 July 2.	R.	Doxey, Frederick. 63, *Park Street, Calcutta.*
1925 Feb. 4.	R.	Dutt, Kiran Chandra. *Lakhsmi Nibas*, 1, *Lakhsmi Dutt Lane, Bagbazar, Calcutta.*
1920 April 7.	R.	Dutt, Kumar Krishna. 10, *Hastings Street, Calcutta.*
1924 Nov. 5.	N.R.	Eaton, Winifred A., Missionary, Canadian Baptist Mission. *Palkonda, Vizag. Dist.*
1921 Nov. 2.	N.R.	Emdadul Haq, Shah, M.L.C. *Vill. Bhowksar, Chandina, P.O. Mudafargar, Dist. Tipperah.*
1911 Nov. 1.	R.	Esch, V. J., Architect, Victoria Memorial

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Date of Election.		
		Building. *Cathedral Avenue, Maidan, Calcutta.*
1904 Aug. 3.	R.	*Fermor, Lewis Leigh, A.R.S.M., D.Sc., F.G.S. *Geological Survey of India, Indian Museum, Calcutta.*
1906 Oct. 31.	N.R.	Finlow, Robert Steel, B.Sc., F.I.C., Director of Agriculture, Bengal. *Ramna P.O., Dacca.*
1924 Mar. 5.	R.	Fitzpatrick, H. *Bengal Club, Calcutta.*
1925 Mar. 4	A.	Foskett, Ralph Cavan, *C/o.* "The Englishman." 9, *Hare Street, Calcutta.*
1913 Nov. 5.	R.	Fox, Cyril S., B.Sc., M.I.M.E., F.G.S. *Geological Survey of India, Indian Museum, Calcutta.*
1919 April 2.	N.R.	Friel, Ralph, I.C.S. *Silchar, Assam.*
1922 April 5.	A.	Fülep, E. G. 5, *Mission Row, Calcutta.*
1919 Feb. 5.	F.M.	Galoostian, Valarshak Mackertich. *P.O. Box* 607, *Sanger, California, U.S.A.*
1919 Nov. 5.	N.R.	Gambhir, J. S. *Shamaldas College, Bhavnagar, Kathiawar.*
1909 Oct. 7.	R.	Gangoly, Ordhendra Coomar, B.A. 12/1, *Gangoly Lane, Calcutta.*
1912 Mar. 6.	R.	Ganguli, Manmohan, B.E. 50, *Raja Rajballav Street, Calcutta.*
1920 Mar. 3.	N.R.	Ganguli, Pratul Pati, B.A., D.T.M., Captain, I.M.S. (Retd.), Teacher of Medicine, Dacca Medical School. 17, *Nayabazar Road, Dacca.*
1925 Feb. 4.	R.	Ganguly, J. N. C., M.A., Darshan-Shastri, National Council Y.M.C.A. 5, *Russell Street, Calcutta.*
1925 Nov. 2.	R.	Gee, Edward Rowland, B.A. (Cantab.), Asst. Superintendent, Geological Survey of India. *Calcutta.*
1924 April 2.	R.	Ghose, The Hon'ble Mr. Justice Charu Chandra, Kt., Barrister-at-Law. *Debendra Ghose Road, Bhowanipore, Calcutta.*
1924 July 2.	R.	Ghose, The Hon. Mr. Justice Bipin Behary. 101, *Beltala Road, Calcutta.*
1924 Dec. 3.	R.	Ghose, Mr. Sushil Chandra, Deputy Magistrate. 1. *Sikdarbagan Street, Calcutta.*
1905 July 5.	R.	Ghosh, Amulya Charan, Vidyabhusana. 28, *Telepara Lane, Calcutta.*
1924 April 2.	R.	Ghosh, K., D.T.M., D.P.H. (Cantab.), L.M.S. 45, *Creek Row, Calcutta.*

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Date of Election.		
1918 Feb. 6.	L.M.	Ghosh, Ekendra Nath, M.D., M.Sc., F.Z.S., F.R.M.S., Prof. of Biology, Medical College. *Calcutta.*
1925 Mar. 4.	R.	Ghosh, Ganendra Chandra, Rai Bahadur, C.I.E. 2, *Simla Street, Calcutta.*
1920 May 5.	R.	Ghosh, Sukhendra Nath, B.A., B.Sc., A.M.I.C.E., M.R.San.I., M.I.E., Executive Engineer, P.W.D. 7, *Heysham Road, Calcutta.*
1912 Sept. 4.	R.	Ghosh, Tarapada. 14, *Paddapukur Street, Kidderpore, Calcutta.*
1924 Dec. 3.	R.	Gilbert, W. G. L., Traffic Manager, Light Railways, Martin & Co. 6-7, *Clive Street, Calcutta.*
1910 Sept. 7.	N.R.	*Gravely, Frederic Henry, D.Sc. *Government Museum, Egmore, Madras.*
1905 May 3.	F.M.	Graves, Henry George, A.R.S.M. 52, *Carington Road, Bedford, England.*
1924 Mar. 5.	R.	Greaves, The Hon'ble Mr. Justice Ewart, Kt. 2, *Short Street, Calcutta.*
1910 Mar. 2.	A.	*Greig, Major Edward David Wilson, M.B., I.M.S. *Simla.*
1900 Dec. 5.	L.M.	Grieve, James Wyndham Alleyne. *C/o Messrs. Coutts & Co.*, 440, *Strand, London, W.C.* 2.
1925 Feb. 4.	R.	Guha, B. S., M.A., Ph.D. 14, *Badurbagan Row, Calcutta.*
1917 June 6	A.	Gupta, Kishorimohan, M.A., Prof. of History, M.C. College. *Sylhet, Assam.*
1923 Mar. 7.	R.	Gupta, N., Bar.-at-Law. *Calcutta Club.*
1919 Mar. 5.	N.R.	Gupta, Sivaprasad. *Seva Upavana, Benares City.*
1925 June 3.	R.	Gupta, Tara Prasanna, M.A. 28-2-1, *Akhil Mistri Lane, Calcutta.*
1915 Aug. 4.	R.	Gurner, Cyril Walter, I.C.S. *United Service Club, Calcutta.*
1925 May 6.	N.R.	Habibullah, The Hon'ble Sir Md., Khan Bahadur, Member for Education, Health and Lands. *Government of India, Delhi.*
1901 Mar. 6.	N.R.	Habibur Rahman Khan. *Bhikanpur, District Aligarh.*
1892 Jan. 6.	F.M.	Haig, Lieut.-Col. Sir T. Wolseley, C.M.G., Trinity College, Dublin, Ireland.
1907 Aug. 7.	F.M.	*Haines, Henry Haselfoot, C.I.E., F.C.H., F.L.S. *Glen Ashton, Wimborne, Dorset.*
1925 Nov. 2.	N.R.	Hamid, Muhammad, B.A., Asst. Superin-

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Date of Election.		
		tendent, Archæological Survey, Central Circle, *Patna*.
1916 Jan. 5.	N.R.	Hamilton, C. J. *Patna University, Patna.*
1920 May 5.	A.	Harcourt, Major E. S. *United Service Club, Calcutta.*
1912 May 1.	R.	Harley, Alexander Hamilton, M.A. *The Madrassah, Calcutta.*
1923 May 2.	A.	Harnett, W. L., Major, I.M.S., Superintendent, Campbell Hospital. *Sealdah House, Lower Circular Road, Calcutta.*
1908 April 1	A.	Harrison, Edward Philip, Ph.D., F.R.S.E. *The Observatory, Alipur, Calcutta.*
1916 Feb. 2.	R.	Hashimi, Mohammad Yusuf, Khan Sahib, M.A., M.R.A.S. *The Madrassah*, 21, *Wellesley Square, Calcutta.*
1919 Nov. 5.	N.R.	Hemraj, Raj Guru. *Dhokatol, Nepal.*
1924 Dec. 3.	R.	Hendry, C. A. St. John, F.R.G.S., M.I.S.E., A.M.I.M.E., M.I E., M.MIN. I., Consulting Mechanical Engineer, Martin & Co. 6 & 7, *Clive Street, Calcutta.*
1911 June 7.	R.	Hidayat Hosain, Muhammad, Shamsu'l 'Ulamā, Mawlawi, Khan Bahadur, Ph.D. 96/2c, *Collin Street, Calcutta.*
1920 Feb. 4.	N.R.	Hill, Harold Brian Cunningham. *Chabua P.O., Assam.*
1924 April 2.	N.R.	Hingston, R. W. G., Major, I.M.S. *C/o Lloyds Bank, Bombay.*
1925 April 1.	R.	Hobbs, Henry. 4, *Esplanade East, Calcutta.*
1921 Nov. 2.	R.	Hora, Sunder Lal, D.Sc. *Zoological Survey of India, Indian Museum, Calcutta.*
1925 Mar. 4.	R.	Hossain, Muhammad Basheer, M A., B.T., Head Master, Government Woodburn M.E. School. 24, *Musalmanpara Lane, Calcutta.*
1873 Jan. 2.	L.M.	Houstoun, George L., F.G.S. *Johnstone Castle, Renfrewshire, Scotland.*
1923 June 6.	N.R.	Howard, A., C.I.E., M.A., Director, Institute of Plant Industry. *Indore, Central India.*
1923 June 6.	A.	Hutton, J. H., C.I.E., M.A., D.Sc., I.C.S. *Kohima, Naga Hills, Assam.*
1924 April 2.	R.	Huq, Mahfuzul, M.A., Lecturer, Presidency College. *Calcutta.*
1925 May 6	N.R.	Inamdar, R. S., Professor of Botany. *Benares Hindu University*, Benares.
1911 Feb. 1.	R.	Insch, James. *C/o Messrs. Duncan Bros. & Co.*, 101, *Clive Street, Calcutta.*

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Date of Election.		
1925 April 1.	R.	Ismail, Abdulla Mohomed. *Amratolla Lane, Calcutta.*
1924 July 2.	N.R.	Iyengar, M. O. Parthasarathy, Ag. Professor of Botany, Presidency College. *Madras.*
1923 Dec. 5.	R.	Jackson, P. S. D/4, *Clive Buildings, Calcutta.*
1921 Feb. 2.	R.	Jain, Chhote Lall, M.R.A.S. 25, *Central Avenue North, Calcutta.*
1925 Nov. 2.	N.R.	James, Richard Congdon. *Dhoolie T.E., Rangajan P.O., Assam.*
1925 May 6.	R.	Jatia, Sir Onkar Mull, Kt., O.B.E. 2, *Rupchand Roy's Street, Calcutta.*
1925 April 1.	R.	Jenaway, James Henry. 6 & 7, *Clive Street, Calcutta.*
1923 Feb. 7.	N.R.	Jinavijayaji, Muni, Principal, Gujerat Puratattva Mandir. *Ellisbridge, Ahmedabad.*
1908 June 3.	R.	Jones, Hubert Cecil, A.R.S.M., A.R.C.S., F.G.S., Superintendent, Geological Survey of India. *Calcutta.*
1924 April 2.	R.	Judah, N. J., M.B., Ch.B., F.R.C.S. (Eng.), Surgeon, Medical College Hospital, Calcutta. 2, *Hungerford Street, Calcutta.*
1911 Nov. 1.	L.M.	Kamaluddin Ahmad, Shams-ul-'Ulama, M.A. *The University, Lucknow.*
1924 Mar. 5.	R.	Kanjilal, M. N., Bar.-at-Law, M.A. LL.B. 17, *Loudon Street, Calcutta.*
1924 Nov. 5.	R.	Kapur, Shamlal. 113, *Cross Street, Calcutta.*
1920 July 7.	R.	Kar, Sites Chandra. 47, *Corporation Street, Calcutta.*
1920 Feb. 4	R.	Keir, W. I., Asst. Architect to the Govt. of Bengal. *Writers' Buildings, Calcutta.*
1910 May 4.	A.	*Kemp, Stanley W., B.A., D.Sc. 27, *Chowringhee Road, Calcutta.*
1925 May 6.	R.	Khanna, Vinayek Lal, M.R.A.S. 12, *Shib Thakur's Lane, Calcutta.*
1920 Mar. 3.	R.	*Khuda Bukhsh, S., Bar.-at-Law. 5, *Elliott Road, Calcutta.*
1909 April 7.	N.R.	Kilner, John Newport, M.B., M.R.C.S., L.R.C.P. *Adra, Chota Nagpur.*
1925 Nov. 2.	R.	Kimura, R. (Ko-Shi), Lecturer, Calcutta University. 22, *Wellesley 2nd Lane, Calcutta.*
1910 Mar. 2.	A.	Kirkpatrick, W. *Chartered Bank Buildings, Calcutta.*

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Date of Election.		
1920 July 7.	R.	Knowles, Robert, Major, M.R.C.S., L.R.C.P., I.M.S. *School of Tropical Medicine, Central Avenue, Calcutta.*
1925 May 6.	R.	Koester, Dr. Hans, Vice-Consul for Germany. 17/1, *Store Road, Ballygunge, Calcutta.*
1925 May 6.	R.	Kolah, K. S., Merchant. 8, *Dhurrumtollah Street, Calcutta.*
1923 Dec. 5.	N.R.	Korke, Vishnu Tatyaji, Captain, F.R.C.P. (Edin.). *Central Research Institute, Kasauli.*
1921 Dec. 7.	N.R.	Kumar, Kumar Anand. *Fairfield, Firozepore Road, Lahore.*
1925 Nov. 2.	N.R.	Kuppaswamy, Valavanur Subramania, M.A., F.L.S., I.F.S., Assistant Conservator of Forests. *Bellary, S. India.*
1923 Mar. 7.	A.	Labey, George Thomas, Bengal Pilot Service. 5, *Loudon Street, Calcutta.*
1925 April 1.	N.R.	Laden La, Sonam Wangfel, Sardar Bahadur, F.R.G.S., Hony. A.D.C. to H.E. The Governor of Bengal. *Darjeeling, India.*
1920 Mar. 3.	R.	Lahiri, Jagadindranath. 91, *Upper Circular Road, Calcutta.*
1925 June 3.	N.R.	Lal, Budh Behari, Rai Saheb, B.A., Ph.D., Head Master, Government High School. *Naini Tal.*
1889 Mar. 6.	L.M.	*La Touche, Thomas Henry Digges, M.A., F.G.S. 230, *Hills Road, Cambridge, England.*
1914 Aug. 5.	R.	Law, Bimala Charan, M.A., B.L., Ph.D., F.R.Hist.S. 24, *Sukea Street, Calcutta.*
1911 Feb. 1.	R.	Law, Narendra Nath, M.A., B.L., P.R.S., Ph.D. 96, *Amherst Street, Calcutta.*
1914 July 1.	R.	Law, Satya Churn, M.A., B.L., F.Z.S., M.B.O.U. 24, *Sukea St., Calcutta.*
1925 Dec. 7.	R.	Lindsay, James Hamilton, I.C.S., Secretary to the Government of Bengal (Edn. Dept.). *Calcutta Club*, 241, *Lower Circular Road, Calcutta.*
1911 May 3.	R.	Lomax, C. E., M.A. *La Martinière, Calcutta.*
1870 April 7.	L.M.	Lyman, B. Smith. 708, *Locust Street, Philadelphia, U.S. America.*
1905 Aug. 2.	R.	*McCay, Lieut.-Col. David, M.D., B.Ch., B.A.O., M.R.C.P., I.M.S. 24, *Park Street, Calcutta.*

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Date of Election.		
1924 Nov. 5.	R.	MacGregor, A. D., M.B.C., V.S., I.V.S., Principal, Bengal Veterinary College, Belgachia. *Calcutta.*
1893 Jan. 11.	L.M.	Maclagan, Sir Edward Douglas, K.C.S.I., K.C.I.E. 188, *West Hill, Putney, London, S.W.* 15.
1924 Mar. 5.	R.	McPherson, James, *C/o.* Messrs. Begg, Dunlop & Co., Ltd. 2, *Hare Street, Calcutta.*
1916 June 7.	N.R.	Mahajan, Surya Prasad. *Murarpur, Gaya.*
1920 Mar. 3.	R.	Mahalanobis, P. C., M.A., B.Sc. 210, *Cornwallis Street, Calcutta.*
1906 Dec. 5.	R.	Mahalanobis, Subodh Chandra, B.Sc., I.E.S, Professor, Presidency College. 210, *Cornwallis Street, Calcutta.*
1911 Mar. 1.	R.	Mahatap, Sir Bijoy Chand, K.C.S.I., Maharajadhiraj of Burdwan. 6, *Alipur Lane, Calcutta.*
1924 Feb. 6.	R.	Mahindra, K. C., B.A. (Cantab.). 6 & 7, *Clive Street, Calcutta.*
1918 Aug. 7.	R.	Maitra, Jatindra Nath. 68/*A*, *Beadon St., Calcutta.*
1918 Feb. 6.	R.	Maitra, Sisir Kumar. 35/5, *Padmapukur Road, Calcutta.*
1920 June 2	N.R.	Majumdar, Nani Gopal, M.A., Curator, Rajshahi Museum. *Rajshahi.*
1916 Feb. 2.	R.	Majumdar, Narendra Kumar, M.A., Asst. Professor, Calcutta University. *Calcutta.*
1913 June 4.	N.R.	Majumdar, Ramesh Chandra, M.A., Ph.D., Professor, Dacca University. *Ramna, Dacca.* [*Calcutta.*
1918 Feb. 6.	L.M	Manen, Johan van. 6, *Temple Chambers,*
1901 June 5.	N.R.	Mann, Harold Hart, D.Sc., M.Sc., F.I.C., F.L.S., Director of Agriculture, Bombay Presidency. *Poona.*
1919 Oct. 10.	N.R.	Manry, Rev. J. C., M.A., Ph.D. *Ewing Christian College, Allahabad City, U.P.*
1920 Aug. 4.	R.	Martin, Oswald. 6 & 7, *Clive Street, Calcutta.*
1924 Mar. 5.	A.	Martin, T. Leslie, M.A. (Cantab.). 6, *Clive Street, Calcutta.*
1919 June 4.	N.R.	Matthai, George, M.A., Professor, Govt. College. *Lahore.*
1920 Dec. 1.	R.	Mazumdar, B. C. 33/1/*C*, *Lansdowne Road, Calcutta.*
1922 Feb. 1.	R.	Megaw, Lieut.-Col. J. W. D., I.M.S., Director, School of Tropical Medicine and Hygiene. 15, *Kyd Street, Calcutta.*

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Date of Election.		
1923 Dec. 5.	N.R.	Meggitt, F. J., Professor of Biology, University College. *Rangoon.*
1886 Mar. 3.	L.M.	Mehta, Roostumjee Dhunjeebhoy, C.I.E., J.P., F.R.S.A. 9, *Rainey Park, Ballygunge, Calcutta.*
1925 Feb. 4.	N.R.	Menon, K. Ramunni, Professor of Zoology, Presidency College. *Madras.*
1884 Nov. 5.	N.R.	*Middlemiss, Charles Stewart, C.I.E., F.R.S., B.A., F.G.S. *Srinagar, Kashmir.*
1884 Sep. 3.	R.	Miles, William Henry, F.E.S. 7, *King Edward Court, Chowringhee, Calcutta.*
1925 Nov. 2.	R.	Mirza, M. B. 36/1*A*, *McLeod Street, Calcutta.*
1912 June 5.	N.R.	Misra, Champaram, B.A., Dy. Director of Industries. *Cawnpore, U.P.*
1919 Nov. 5.	N.R.	Misra, Pramatha Nath, M.R.A.S., Pleader. *Malda.*
1924 April 2	R.	Mitra, J. C., M.A., B.L., Late Accountant-General, Bengal. 1, *Abinash Mitter Lane, Calcutta.*
1906 June 6.	R.	Mitra, Kumar Manmatha Nath, 34, *Shampukur Street, Calcutta.*
1919 April 2.	R.	Mitra, Panchanan. *Bangabasi College, Calcutta.*
1924 April 2.	R.	Mitsukuri, R., LL.B. 2 & 3, *Clive Row, Calcutta.*
1924 Mar. 5.	R.	Mitter, Sir B. C., Kt., Bar.-at-Law. 2/1, *Loudon Street, Calcutta.*
1924 Mar. 5.	R.	Mitter, B. L., M.A., B.L., Bar.-at-Law, Standing Counsel, Bengal. 5, *Outram Street, Calcutta.*
1925 April 1.	R.	Mitter, B. P. D., B.A., B.Sc. 75, *Chuckerbere Road, Elgin Road P.O., Calcutta.*
1924 Mar. 5.	R.	Mitter, The Hon'ble Mr. Justice Dwarkanath, M.A., D.L. 25, *Nanda Ram Sen Street, Calcutta.*
1924 Mar. 5.	R.	Mitter, Sir P. C., C.I.E., M.L.C., Vakil, High Court. 34/1, *Elgin Road, Calcutta.*
1925 Mar. 4.	R.	Mitter, Profulla Chandra, M.A., Ph.D. Professor of Chemistry, Calcutta University. 22, *Garpar Road, Calcutta.*
1920 Dec. 1.	N.R.	Mohammed Akbar Khan, The Hon'ble Nawab, Major, C.I.E., I.A., Khan of Hoti. *Hoti, N.-W.F.P.*
1923 May 2.	R.	Möller, H. P. 18, *Ballygunge Circular Road, Calcutta.*

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1924 Aug. 6.	N.R.	Moloney, William J. *C/o Reuter's*, 26/7, *Dalhousie Square, Calcutta.*
1924 Nov. 5.	R.	Mookerjee, B. N., B.A. (Cantab.). 6 & 7, *Clive Street, Calcutta.*
1924 Dec. 3.	R.	Mookerjee, J. N. 6 & 7, *Clive Street,* [*Calcutta.*
1924 Dec. 3.	R.	Mookerjee, Priyanath, M.A., Rai Bahadur, I.S.O., Late Inspector-General of Registration, Bengal. 30, *Harrison Road, Calcutta.*
1898 May 4.	R.	Mookerjee, Sir R. N., K.C.I.E., K.C.V.O. 7, *Harington Street, Calcutta.*
1924 July 2.	R.	Mookerjee, Syama Prasad, M.A., B.L., F.C.U. 77, *Russa Road North, Calcutta.*
1919 Feb. 5.	R.	Moreno, Henry William Bunn, M.A., Ph.D., M.R.A.S. 13, *Wellesley Street, Calcutta.*
1912 Jan. 10.	R.	Muhammad Kazim Shirazi, Aga. 23, *Lower Chitpur Road, Calcutta.*
1925 May 6.	R.	Mukerjea, Jogendra Nath, Esq., M.A., B.L. *Talla, Calcutta.*
1909 Mar. 3.	R.	Mukherjee, Brajalal, M.A., Solicitor. 12, *Old Post Office Street, Calcutta.*
1916 Mar. 1.	R.	Mukherjee Prabhat Kumar, Bar.-at-Law. 14*A*, *Ramtanoo Bose Lane, Calcutta.*
1924 Mar. 5	R.	Mukherji, S., M.A., B.L. 7, *Old Ballygunj Road, Calcutta.*
1921 Feb. 2.	A.	Mukherjee, Subodh Chandra, M.A. 97/1, *Musjidbari Street, Calcutta.*
1922 July 5.	N.R.	Mukherji, Radhakumud, Prof. of Indian History, University of Lucknow. *Lucknow.*
1899 Sept. 29.	R.	Mukherjee, Jateendra Nath, B.A., Solicitor. 4, *Hastings Street, Calcutta.*
1924 Mar. 5.	R.	Mukherjee, Narendra Nath, B.A. (Cal.). 1, *Wellington Sq., Calcutta.*
1908 Feb. 5.	R.	*Mukhopadhyaya, Girindra Nath, Bhisagacharya, B.A., M.D. 156, *Haris Mukerjee Road (North), Bhowanipur, Calcutta.*
1921 Feb. 2.	R.	Mukhopadhyay, Ramaprasad, M.A., B.L. 77, *Russa Road North, Bhowanipore.*
1924 Mar. 5.	R.	Murray, Sir Alexander R., C.B.E. 4, *Clive Row, Calcutta.*
1925 June 3.	N.R.	Musa, Moulvi Muhammad, Khan Bahadur, M.A., Principal, Chittagong Madrassah. *Madrassah Hill, Chittagong.*
1921 June 1.	N.R.	Muzammil-ullah Khan, Mohammad, Hon. Nawab, Khan Bahadur, O.B.E., Rais. *Bikampur, Dist. Aligarh, U.P.*

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Date of Election.		
1906 Mar. 7.	N.R.	**N**ahar, Puran Chand, Solicitor. *C/o* 48, *Indian Mirror Street, Calcutta.*
1924 May 7.	N.R.	Nait, Shri Ram, Rai Saheb, Late Diwan, Bijawar State. *Banpure Gate, Tikamgarh (Bundelkhand).*
1923 Mar. 7.	R.	Nandi, P., M.D. (Cal.), Professor of Pharmacology, Carmichael Medical College. 34/1, *Beadon Street.*
1918 Sept. 25.	N.R.	Narayan, Victor Nityendra, Maharaj Kumar of Cooch Behar. *Cooch Behar.*
1916 July 5.	R.	Naseer Hosein Khayal, Saiyed. 78, *Prinsep Street, Calcutta.*
1914 Feb. 4.	R.	Nawab Ali Chaudhuri, The Hon'ble Nawab Bahadur Saiyed, 27, *Weston Street, Calcutta.*
1924 Nov. 5.	R.	Nazir Ahmed, Hāfiz, Shamsu'l Ūlamā', Khān Ṣāhib. 212-1, *Linton Street, P.O. Entally.*
1901 Mar. 6.	N.R.	Nevill, Henry Rivers, C.I.E., O.B.E., I.C.S. *Commissioner's House, Jhansi, U.P.*
1924 Dec. 3.	N.R.	Newman, Chas. F., F.R.G.S., M.C.P. *Bhopal, C.I.*
1889 Aug. 29.	L.M.	Nimmo, John Duncan. *C/o Messrs. Walter Duncan & Co.*, 137, *West George Street, Glasgow.*
1913 July 2.	N.R.	Norton, E. L., I.C.S., District Magistrate. *Gorakhpur, U.P.*
1924 Aug. 6.	R.	Nyss, Wm. B. S., Superintendent, Excise and Salt. *Charnock Place, Calcutta.*
1925 April 1.	R.	**O**aten, Edward Farley, M.A., LL.B. I.E.S. *United Service Club, Calcutta.*
1925 Nov. 2.	R.	Ormond, Ernest Charles, Barrister-at-Law. *Bar Library, High Court, Calcutta.*
1915 April 7.	F.M.	Ohtani, Count Kozni. *C/o Consulate-General of Japan, Calcutta.*
1923 June 6.	A.	Ottens, Nicholas, B.Sc. 1, *Wellesley Place, Calcutta.*
1925 June 3.	N.R.	**P**ancholy, Kesari Singh, B.A., LL.B., Commissioner of Industries. *Rewa State, C.I.*
1923 Dec. 5.	N.R	Pande, Shiva Bandhan, Retired Tahsildar, *Ramaipatti, Mirzapur.*
1920 Aug. 4.	N.R.	Panikker, Padmanabha N., B.A., F.L.S., Inspector of Fisheries. *Trivandrum, Travancore.*

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Date of Election		
1904 Aug. 3.	N.R.	Parasnis, Dattatraya Balwant, Rao Bahadur. *Satara.*
1919 Nov. 5.	R.	*Pascoe, Edwin Hall, M.A., Sc.D., D.Sc., F.G.S., Director, Geological Survey of India. 27, *Chowringhee, Calcutta.*
1888 June 6.	L.M.	Pennell, Aubray Percival, B.A., Bar.-at-Law. *Rangoon.*
1925 April 1.	R.	Perier, His Grace the Most Rev. Dr. Ferdinand, S.J., Archbishop of Calcutta 32, *Park Street, Calcutta.*
1889 Nov. 6.	L.M.	*Phillott, Lieut.-Col. Douglas Craven, M.A., Ph.D. *Felsted, Essex, England.*
1904 June 1.	R.	Pilgrim, Guy E., D.Sc., F.G.S. *Geological Survey of India, Calcutta.*
1925 Mar. 4.	R.	Poddar, Hanuman Prashad. 10*A*, *Central Avenue (South), Calcutta.*
1925 April 1.	N.R.	Prasad, Sri Durga Sadasiveswara, Sri Vasireddi, Raja Bahadur, Mannei Sultan, Garu, Zemindar of Jayantipuram. *Nandīgama, Dt. Kistna.*
1918 April 3.	R.	Prashad, Baini, D.Sc., F.Z.S. *Zoological Survey of India, Indian Museum, Calcutta.*
1925 Mar. 4.	R.	Pochhammer, Wilhelm von, Vice-Consul for Germany. 2, *Store Road, Ballygunge.*
1925 Aug. 3.	R.	Pruthi, Hem Singh, Assistant Superintendent. *Zoological Survey of India, Indian Museum, Calcutta.*
1924 Aug. 6.	R.	Purohit, K. J., F.S.A.S., Lindlie Chambers. 6, *Hastings Street, Calcutta.*
1924 Dec. 3.	R.	Pushong, E. S., M.D., L.S.A. 1, *Wood Street, Calcutta*
1924 April 2.	R.	Raha, S. K., Rai Bahadur. 5, *Lovelock Place, Ballygunge, Calcutta.*
1880 April 7.	N.R.	Rai, Bepin Chandra. *Giridih, Chota Nagpur.*
1895 Aug. 29.	N.R.	Rai-Chaudhuri, Jatindranath, M.A., B.L. *Taki, Jessore.*
1922 Feb. 1.	R.	Raman, Chandrasekhara Venkata, M.A., D.Sc., F.R.S. 210, *Bowbazar Street, Calcutta.*
1905 Jan. 4.	N.R.	Rankin, James Thomas, I.C.S., Commissioner. *Dacca.*
1921 Dec. 2	A.	Ranking, Colonel Geo. S., C.M.G. *United Service Club, Calcutta.*
1924 Dec. 3.	R.	Rao, H. Srinivasa, Assistant Superinten-

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ate of Election.		
		dent, Zoological Survey of India, Indian Museum. *Calcutta*
1925 May 6.	R.	Rao, M. Vinayek, Rao Bahadur, B.A., F.G.S., Assistant Superintendent, Geological Survey of India. 27, *Chowringhee Road, Calcutta.*
1924 July 2.	N.R.	Ray, Abinash Chandra, B.A. *Cooch Behar.*
1924 July 2.	R.	Ray, Bhabendra Chandra. 6, *Short Street, Calcutta.*
1910 Sept. 7.	R.	Ray, Kumar Sarat Kumar, M.A., M.R.A.S. 52, *Police Hospital Road, Entally, Calcutta.*
1921 Jan. 5.	N.R.	Ray, Maharaja Jagadisnath, Maharaja of Dinajpore. *Dinajpore.*
1924 April 2.	R.	Ray, Raja Janaki Nath. 102, *Sovabazar Street, Calcutta.*
1890 Mar. 5.	R.	*Ray, Sir Prafulla Chandra, Kt., D.Sc. *University College of Science, Calcutta.*
1919 Feb. 5.	R.	Ray, Sasadhar. 17, *Balaram Bose Ghat Road, Bhowanipur, Calcutta.*
1924 July 2.	R.	Ray, Suresh Chandra, F.Z.S., F.L.S., F.C.S., F.R.H.S *Ray Villa, Bonhoogly, Baranagar (Calcutta)*
1924 Mar. 5.	R.	Ray-Chowdhury, M. N., F.R.A.S, F.R.C.S., Raja of Santosh. 1, *Alipur Park Road, East, Calcutta.*
1920 Mar. 3.	R.	Raye, Narendra Nath, Principal, Ripon College. *Calcutta.*
1925 Aug. 3.	N.R.	Reuben, David Ezra, I.C.S., Collector. *Balasore, B. & O.*
1924 April 2.	F.M.	Richards, F. J., I.C.S. 6, *Lexham Gardens, London, W. 8.*
1925 June 3.	R.	Richardson, Richard Hawkins. 6 & 7, *Clive Street, Calcutta.*
1918 April 3.	F.M.	Robinson, Herbert C., Director of Museums and Fisheries, Federated Malay States. *Kuala Lumpur.*
1924 Dec. 3.	F.M.	Roerich, George Nicolas, M.A., M.R.A.S. 310. *Riverside Drive, New York, U.S.A.*
1924 Dec. 3.	N.R.	Rogers, T. E. *Mariani Tea Estate, Mariani, Assam.*
1920 Mar. 3.	A.	Ronaldshay, The Right Hon'ble the Earl of, *England.*
1924 May 7.	R.	Rose, G. F, Director, Andrew Yule & Co., Ltd. *Clive Row, Calcutta.*
1901 Dec. 4.	F.M.	*Ross, Sir Edward Denison, Kt., C.I.E., Ph.D. Director, School of Oriental Studies. *London.*

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1918 July 3.	R.	Roy, Bidhan Chandra, M.D., F.R.C.S., M.R.C.P. (Lond.). 36, *Wellington Street, Calcutta.*
1921 Sept. 7.	R.	Roy, Hem Chandra. 76/1*A*, *Upper Circular Road, Calcutta.*
1903 July 1.	L.M.	Roy, Jagadindranath, Maharaja Bahadur. 6, *Lansdowne Road, Calcutta.*
1915 Oct. 27.	R.	Roy, Jamini Bhusan, Kaviraj, Kaviratna, M.A., M.B. 46, *Beadon Street, Calcutta.*
1924 Dec. 3.	R.	Roy, P. L., Barrister-at-Law. 15, *Store Road, Ballygunge, Calcutta.*
1920 July 7.	R.	Roy-Chaudhuri, Hem Chandra, M.A., Ph.D. 43/2, *Amherst Street, Calcutta.*
1924 Nov. 5	R.	Roy Choudhuri, Hiran Kumar. 1/2, *Nursing Lane, Calcutta.*
1924 Aug. 6.	R.	Roy-Chowdhury, Brajendra Kishore. 53, *Sukea Street, Calcutta.*
1915 May 5.	N.R.	Rushbrook-Williams, L. F., M.A., B.Litt., C.B.E., M.R.A.S., F.R.Hist.S. *Foreign Minister, Patiala State.*
1925 April 1.	R.	Sadiq, Hakeem Saiyed Mohammad, Unani Physician. 11, *Harinbari 1st Lane, Calcutta.*
1916 April 5.	N.R.	Saha, Radhika Nath, M.R.A.S. 16, *Lachmikundu, Benares City, U.P.*
1924 Nov. 5.	N.R.	Sahni, B., Professor of Botany. *University of Lucknow, Lucknow.*
1925 April 1.	N.R.	Sales, Harold Spence, M.I.E. *No.* 2, *Bungalow, Paksey, E.B.R.*
1925 Nov. 2.	R.	Sanaullah, Muhammad, M.A., Professor of Arabic and Persian, Presidency College. *Calcutta.*
1924 Dec. 3.	R.	Sarkar, Mr. C. K., C.E. 10, *Hastings Street, Calcutta.*
1922 Nov. 1.	N.R.	Sarkar, Suresh Chandra, Dy. Collector, *Barganda, Giridih, B. & O.*
1925 April 1.	N.R.	Sarraf, B. L., B.A., LL.B. *Saraffa Bazar, Saugor, C.P.*
1909 Mar. 3.	R.	Sarbadhikari, Sir Deva Prasad, Kt., C.I.E., M.A., B.L., F.C.U., L.L.D., Suriratna, Vidyaratnaker, Jnanasindhu. 20, *Suri Lane, Entally P.O., Calcutta.*
1925 April 1.	R.	Sen, Binoy Chandra, M.A., Professor. 7, *Bishwakosh Lane, Baghbazar, Calcutta.*
1924 Dec. 3.	R.	Sen, H. K., M.A., D.Sc., D.I.C., Prof. of Chemistry, University College

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Date of Election.		
		of Science. 92, *Upper Circular Road, Calcutta.*
1902 May. 7.	R.	Sen, Jogindranath, Vaidyaratna, M.A., Vidyabhusan. 32, *Prasanna Kumar Tagore Street, Calcutta.*
1923 Dec. 5.	L.M.	Sen, H.H. Raja Lakshman, Raj of Sundarnagar. *Suket State, Punjab*
1914 April 1.	N.R.	Sen-Gupta, Nares Chandra, M.A., D.L. *Ramna P.O., Dacca.*
1897 Dec. 1.	R.	Seth, Mesrovb Jacob, M.R.A.S., M.S.A., F.R.S.A. 19, *Lindsay Street, Calcutta.*
1911 July 5.	R.	*Sewell, Robert Beresford Seymour, Major, I.M.S., M.A., M.R.C.S., L.R.C.P., F.Z.S., F.L.S *Indian Museum, Calcutta.*
1923 Feb. 7.	R.	Shanks, Capt. George, B.A., M.B.C.M., I.M.S., Professor of Pathology, Medical College. *Calcutta.*
1925 Nov. 2.	R.	Sharif, Mohammad, M.Sc., F.R.M.S., Offg. Assistant Superintendent, Zoological Survey of India, Indian Museum. *Calcutta.*
1923 Dec. 5.	R.	Shastri, Ashutosh, Principal, Sanskrit College. *Calcutta.*
1885 Feb. 4.	L.M.	*Shastri, Haraprasad, Mahamahopadhyaya, C.I.E., M.A. 26, *Pataldanga Street, Calcutta.*
1923 May 2.	N.R.	Shebbeare, E. O., Deputy Conservator of Forests. *Darjeeling.* [*Calcutta.*
1924 Dec. 3.	R.	Shipway, F. W. 345/6/7, *Grand Hotel,*
1909 Jan. 6.	N.R.	Shirreff, Alexander Grierson, B.A., I.C.S. *Sitapur, U.P.*
1913 Dec. 3.	R.	Shorten, Captain James Alfred, B.A., M.B., B.Ch., I.M.S. *Medical College, Calcutta.*
1902 Feb. 5.	N.R.	Shyam Lal, Lala, M.A., LL.B. *Nawabganj, Cawnpore, U.P.*
1924 Dec. 3.	N.R.	Siddiqi, A., M.A., Ph.D., Professor of Arabic and Islamic Studies, Dacca University. *Ramna, Dacca, Bengal.*
1913 Mar. 5.	L.M.	*Simonsen, John Lionel, D.Sc., F.I.C., *Indian Institute of Science, Bangalore.*
1918 Feb. 6.	N.R.	Singh, Badakaji Marichi Man. 38, *Khichapokhari, Kathmandu, Nepal.*
1899 Aug. 29.	N.R.	Singh, Sir Prabhu Narain, G.C.I.E., G.C.S.I., Maharaja of Benares. *Ramnagar Fort, Benares.*
1909 April 7.	N.R.	Singh, Raja Prithwipal, F.R.G.S., F.R.S.A. *Chandrahas Palace, P.O. Hathannda, Dist. Barabanki, Oudh.*

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1899 Nov. 6.	L.M.	Singh, Sir Rameshwar, G.C.I.E., K.B.E., D.Litt., F.R.A.S., F P U., Maharajadhiraja of Darbhanga. *Darbhanga.*
1919 Nov. 5.	N.R	Singh, Shyam Narayan, M B.E , M.L.A., Rai Bahadur, Bihar and Orissa Civil Service. *Patna, E I.R.*
1894 Feb. 7.	N.R.	Singh, H.H. Vishwa Nath, Maharaja Bahadur. *Chhatturpur, Bundelkhund.*
1918 Feb. 6.	N.R.	Singha, Kumar Arun Chandra, M.A *Dacca.*
1912 May 1.	R.	Singha, Lalit Mohan, Rai Bahadur. *Zemindar of Chakdighi, Dist. Burdwan.*
1925 Mar. 4.	R.	Sinha, Purna Chandra. 146, *Baranoshi Ghosh Street, Jorasanko, Calcutta.*
1918 April 3.	N.R.	Sinha, Bhupendra Narayan. Raja Bahadur, B.A. *Nashipur Rajbati, P.O. Nashipur.*
1922 Feb. 1.	R.	Sinha, Kumar Gangananda, M.A. 7, *Dedarbaksh Lane, Calcutta.*
1913 July 2.	N.R.	Sinha, Rudra Datta, M.A., LL.B., M.R.A.S. *Nazirabad Road, Lucknow.*
1925 June 3.	R.	Singhania, Parshotamdas. 3-1, *Mangoe Lane, Calcutta.*
1912 Sept. 5.	N.R.	Singhi, Bahadur Singh. *Azimgunj, Murshidabad.*
1916 July 5.	R.	Sircar, Ganapati, Vidyaratna. 69, *Beliaghatta Main Road, Calcutta.*
1924 Mar. 5.	R.	Sircar, N. N., M.A., B.L., Bar-at-Law. 36/1, *Elgin Road, Calcutta.*
1924 Mar. 5.	R.	Sircar, Sir Nil Ratan, Kt., M.A , M.D. 7, *Short Street, Calcutta.*
1920 June 2.	A.	Skinner, S. A., *C/o* Messrs. Jessop & Co., Ltd. 93. *Clive Street, Calcutta.*
1923 Mar. 7.	N.R.	Stamp, L Dudley, B.A., D.Sc. *C/o Post master, Rangoon.*
1904 Sept. 28.	R	Stapleton, Henry Ernest, M.A., B.Sc., I.E.S., Principal, Presidency College. *Calcutta.*
1925 Dec 7.	R.	Stark, Leonardus. *C/o Netherlands India Commercial Bank, Dalhousie Square, Calcutta.*
1925 May 6.	R.	Staub, Max, Consul for Switzerland. 100, *Clive Street, Calcutta.*
1908 Dec. 2.	N.R.	Steen, Major Hugh Barkley, M.B., I.M.S. *C/o* 1, *Upper Wood Street, Calcutta.*
1922 Feb. 1.	R.	Stewart, A. D., Major, I.M.S., Director, Public Health Laboratories, School of Tropical Medicine and Hygiene. *Calcutta.*

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Date of Election.		
1925 Nov. 2.	N.R.	Stocks, C. de Beauvoir, (Mrs.). C/o *Postmaster, Kalimpong, Bengal.*
1 23 Aug. 1.	N.R.	Stow, Alexander Montagu, M.A., O.B.E., I.C.S., Settlement Commissioner. *Kashmir.*
1922 Nov. 1.	R	Strickland-Anderson, (Mrs.). *Suite* 143, *The Grand Hotel, Calcutta.*
1921 Mar. 2.	N.R.	Sturrock, Lieut.-Col. G. C., I.M.S. *Craig Dhue. Simla.*
1907 June 5.	R.	*Suhrawardy, Abdullah Al-Ma'mun, Iftikharul Millat, M.A., D.Litt, LL.D., Barrister-at-Law. 56, *Mirzapur Street, Calcutta.*
1920 Jan. 7.	N.R.	Suhrawardy, Hassan, Major, M.D., F.R.C.S., I.T.F.M.C. *Gaya, E.I. Ry.*
1920 Mar. 3.	N.R.	Sundara Raj, Bunguru, M.A., Ph.D., Director of Fisheries. *Madras.*
1919 Feb. 5.	N.R.	Surfraz, Abdul Kader. *Elphinstone College, Bombay.*
1909 Jan. 6.	R.	Tagore. Kshitindranath, B.A., Tatwanidhi. *5/1B, Baranashi Ghose 2nd Lane, Jorasanko, Calcutta.*
1898 April 6.	R.	Tagore Sir Pradyot Coomar, Maharaja Bahadur, Kt *Pathuriaghatta, Calcutta.*
1904 July 6.	F.M.	Talbot, Walter Stanley, C.I.E., I.C.S. (retired). *Glenhurst Esher, Surrey, England.*
1925 April 1.	R.	Taraporewala, Irach J. S., B.A., Ph.D., Barrister-at-law, Professor of Comparative Philology, University of Calcutta. 77-9, *Dhurrumtollah Street, Calcutta.*
1893 Aug. 31.	L.M.	Tate, George Passman. 56, *Cantonment, Bareilly, U.P.*
1906 Dec. 6.	N.R.	Tek Chand, The Hon'ble Diwan, O.B.E., I.C.S, B.A., M.R.A.S., Barrister-at-Law, Commissioner, Ambala Division. *Ambala Cantonment. Punjab.*
1921 Dec. 7.	N.R.	Telang, P. K., Professor of History, Hindu University. *Benares City.*
1878 June 5.	N.R.	Temple, Colonel Sir Richard Carnac, Bart, C.I.E. *C/o Lloyds Bank, Bombay.*
1909 Aug. 4.	N.R.	Thompson, John Perronet, M.A., I.C.S., Chief Secretary to the Govt. of the Punjab. *Lahore.*
1904 June 1.	R.	*Tipper, George Howlett, M.A., F.G.S., M.Inst.M.M. *C/o Geological Survey of India, Indian Museum, Calcutta.*

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Date of Election.		
1925 Aug. 3	N.R.	Tomar, Udai Vir Singh, B.A., Superintendent, The Sardar Boarding House, Panna State. *Bundelkhand, C.I.*
1917 Dec. 5.	A.	Tripathi, Ramprasad, Reader in Modern Indian History. *The University, Allahabad.*
1925 May 6.	R.	**U**kil, Amulya Chandra, M.B. (Cal.), Professor of Bacteriology, National Medical Institute. 6/1, *Kanklia Road, Ballygunge, Calcutta.*
1924 Nov. 5.	R	**V**aile, Maurice Arthur Stuart. 8, *Clive Street, Calcutta.*
1925 July 6.	N.R	Varma, Sohan Lal, Honorary Magistrate. *P.O. Laharpur, Sitapur District.*
1925 Dec. 7.	R.	Varugis, George. B.Sc., Assistant Superintendent, Zoological Survey of India. 33/1, *Amherst Street, Calcutta.*
1894 Sep. 27.	R.	Vasu, Nagendra Nath. 20, *Visva Kosh Lane, Baghbazar, Calcutta.*
1901 Mar. 6.	L.M.	*Vogel, Jean Philippe, Litt.D. *The University, Leiden, Holland.*
1894 Sept. 27.	L.M.	Vost, William, Lieut.-Col., I.M.S. 26, *Crystal Palace Part Road, Sydenham, London, S.E.* 26.
1925 May 6.	R.	**W**adia, D. N., M.A., B.Sc., F.R.G.S., F.G.S., Geological Survey of India. 27, *Chowringhee, Calcutta.*
1925 June 3.	R.	Walton, Eric Bell. 93, *Park Street, Calcutta.*
1909 Dec. 1.	N.R.	Webster, J. E., I.C.S. *Sylhet, Assam.*
1906 Sept. 19.	N.R.	Whitehead, Richard Bertram, I.C.S. *Rupar, Ambala, Punjab.*
1915 Jan. 6.	N.R.	Whitehouse, Richard H., D.Sc., I.E.S. *Central Training College, Lahore.*
1919 May 7.	A.	Wills, Cecil Upton, B.A., I.C.S. *Nagpur.*
1906 Mar. 7.	A.	Woolner, Alfred Cooper, M.A. *Punjab University, Lahore.*
1908 April 1.	R.	Wordsworth, William Christopher, M.A., I.E.S. *Presidency College, Calcutta.*
1919 Feb. 5.	N.R.	**Y**azdani, Ghulam, M.A. *Hyderabad, Deccan.*
1906 June 6.	N.R.	Young, Mansel Charles Gambier. *Khagaul P.O., Dinapore, E.I.R.*

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SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	A. H. Sayce, Professor of Assyriology, Queen's College. *Oxford, England.*
1884 Jan. 15.	Émile Senart. 18, *Rue François Ier, Paris, France.*

HONORARY FELLOWS.

Date of Election.	
1896 Feb. 5.	Charles Rockwell Lanman. 9, *Farrar Street, Cambridge, Massachusetts, U.S. America.*
1899 Dec. 6.	Sir Edwin Ray Lankester, K.C.B., M.A., LL.D., F.R.S. *British Museum (Nat. Hist.), Cromwell Road, London, S.W.*
1904 Mar. 2.	Sir George Abraham Grierson, K.C.I.E., Ph.D., D.Litt., LL.D., F.B.A., I.C.S. (Retired). *Rathfarnham, Camberley, Surrey, England.*
1911 Sept. 6.	Alfred William Alcock, C.I.E., M.B., LL.D., F.R.S. *Heathlands, Belvedere, Kent.*
1911 Sept. 6.	Edward Granville Browne, M.A., M.B., F.R.C.P., M.R.C.S., F.B.A. *Pembrooke College, Cambridge.*
1911 Sept. 6.	Kamakhyanath Tarkavagisa, Mahamahopadhyaya. 111/4, *Shambazar Street, Calcutta.*
1915 Aug. 4.	Sir Joseph John Thomson, Kt., O.M., M.A., Sc.D., D.Sc., LL.D., Ph.D. *Trinity College, Cambridge, England.*
1916 Dec. 6.	G. A. Boulenger, F.R.S., LL.D., British Museum (Nat. Hist.). *Cromwell Road, London, S.W.*
1917 May 2.	Herbert Allen Giles, Professor. 10, *Selwyn Gardens, Cambridge, England.*
1920 Feb. 4.	Sir Charles Eliot, K.C.M.G., C.B., M.A., LL.D., D.C.L. *H.M's. Ambassador at Tokio, Tokiō Japan.*
1920 Feb. 4.	Sylvain Lévi. *Collège de France, Paris.*
1920 Feb. 4.	Sir Aurel Stein, K.C.I.E., Ph.D., D.Litt, D.Sc., D.O.L., F.B.A. *Srinagar, Kashmir.*
1920 Feb. 4.	A. Foucher, D.Litt. *University of Paris.*
1920 Feb. 4.	Sir Arthur Keith, M.D., F.R.C.S., LL.D., F.R.S. *Lincoln's Inn Fields, London, W.C. 2.*
1920 Feb. 4.	R. D. Oldham, F.R.S., F.G.S., F.R.G.S. 1, *Broomfield Road, Kew, Surrey. England.*
1920 Feb. 4.	Sir David Prain, Kt., C.M.G., C.I.E., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.R.S., F.Z.S., M.R.I.A. *Royal Botanic Gardens, Kew, Surrey, England.*

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Date of Election.	
1920 Feb. 4.	Sir Joseph Larmor, Kt., M.P., M.A., D.Sc., LL.D., D.C.L., F.R.S., F.R.A.S. *Cambridge.*
1920 Feb. 4.	Sir James Frazer, Kt., D.C.L., LL.D., Litt.D. 1, *Brick Court, Temple, London, E.C.* 4.
1920 Feb. 4.	J. Takakusu. *Imperial University of Tokyo, Japan.*
1921 Mar. 2.	F. W. Thomas, M.A., Ph.D., Librarian, India Office. *Whitehall, London, S.W.* 1.
1922 June 7.	W. H. Perkin, Ph.D., Sc.D., LL.D., F.R.S.
1922 June 7.	Sir Thomas Holland, K.C.S.I., K.C.I.E., D.Sc., F.R.S., Rector, Imperial College of Science. *London.*
1922 June 7.	Sir Leonard Rogers, Kt., C.I.E., M.D., B.S., F.R.C.P., F.R.S., I.M.S.
1922 Nov. 1.	Arthur Anthony Macdonell, M.A., Ph.D., Boden Prof. of Sanskrit, University of Oxford.
1925 Jan. 7.	Sten Konow, Ethnographisk Museum. *Christiana, Norway.*
1925 Nov. 2.	H. Beveridge, I.C.S. (Retired). 53, *Campden House Road, London, W.* 8.

FELLOWS.

Date of Election.	
1910 Feb. 2.	Haraprasad Shastri, C.I.E., M.A.
1910 Feb. 2.	T. H. D. La Touche, B.A., F.G.S.
1910 Feb. 2.	D. C. Phillott, M.A., Ph.D., M.R.A.S.
1910 Feb. 2.	Sir Prafulla Chandra Ray, Kt., D.Sc.
1910 Feb. 2.	Sir E. D. Ross, Kt., C.I.E., Ph.D.
1910 Feb. 2.	M. W. Travers, D.Sc., F.R.S.
1912 Feb. 7.	Sir J. C. Bose, Kt., C.S.I., C.I.E., M.A., D.Sc.
1912 Feb. 7.	P. J. Brühl, I.S.O., Ph.D., F.C.S., F.G.S.
1912 Feb. 7	S. R. Christophers, C.I.E., O.B.E., I.M.S.
1912 Feb. 7.	C. S. Middlemiss, B.A., F.G.S., C.I.E., F.R.S.
1913 Feb. 5.	J. Ph. Vogel, Ph.D., Litt.D.
1913 Feb. 5.	S. W. Kemp, B.A., D.Sc.
1915 Feb. 3.	E. D. W. Greig, C.I.E., M.B., I.M.S.
1915 Feb. 3.	G. H. Tipper, M.A., F.G.S., M.Inst. M.M.
1915 Feb. 3.	H. H. Haines, C.I.E., F.C.H., F.L.S.
1916 Feb. 2.	R. Burn, C.I.E., I.C.S.
1916 Feb. 2.	L. L. Fermor, A.R.S.M., D.Sc., F.G.S.
1917 Feb. 7.	F. H. Gravely, D.Sc.
1918 Feb. 6.	J. L. Simonsen, D.Sc., F.I.C.
1918 Feb. 6.	D. McCay, M.D., M.R.C.P., I.M.S.
1918 Feb. 6.	A. A. Suhrawardy, M.A., D.Litt., LL.D., Ph.D.
1919 Feb. 5.	J. Coggin Brown, O.B.E., M.I.M.E., F.G.S.

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Date of Election.	
1919 Feb. 5.	W. A. K. Christie, B.Sc., Ph.D., M.Inst.M.M.
1919 Feb. 5.	D. R Bhandarkar, M.A.
1919 Feb. 5.	R. B. Seymour Sewell, I.M.S., M.A., M.R.C.S., L.R.C P., F.Z.S.
1921 Feb. 2.	U. N. Brahmachari, M.A., Ph.D., M.D.
1921 Feb. 2.	B. L. Chaudhuri, B.A., D.Sc., F.L.S., F.R S.E.
1922 Feb. 1.	E. H. Pascoe, M.A., Sc.D., D.Sc., F.G.S.
1922 Feb. 1.	Ramaprasad Chanda, B.A.
1923 Feb. 7.	S. Khuda Baksh, M.A., B.C.L.
1923 Feb. 7.	G. N. Mukhopadhvaya, B.A., M.D.
1925 Feb. 4.	M. Hidayat Hosain, Ph.D.
1925 Feb. 4.	Guy E. Pilgrim, D.Sc., F.G.S.
1925 Feb. 4.	C. V. Raman, M.A., D.Sc., F.R.S.

ASSOCIATE MEMBERS.

Date of Election.	
1885 Dec. 2.	*Dr. A. Führer, Prof. of Sanskrit. 5, *Dorenbach-strasse. Binningen. Basel, Switzerland.*
1902 June 4.	*A. H. Francke. Revd. C. O. Universitats Bibliothek, Dorotheenstr. 81, *Berlin, N.W.* 7.
1908 July 1.	*Dinesh Chandra Sen, Rai Bahadur, B.A., D.Litt. 19, *Visvakos Lane, Bagbazar, Calcutta.*
1910 Sept. 7.	*L. K. Anantha Krishna Iyer, Rao Bahadur, B.A., L.T., F.R.A.I., University Lecturer in Anthropology, Calcutta University. *Calcutta.*
1910 Dec. 7.	*Rev. Fr. H. Hosten, S.J. *St. Joseph's College, Darjeeling.*
1915 Mar. 3.	*E. Brunetti. 27, *Chowringhee Road, Calcutta.*
1919 Sept. 3.	*H. Bruce Hannah. *Bengal Club, Calcutta.*
1921 Jan. 5.	Shahay Ram Bose, M.A., Ph.D., F.L.S., Prof. of Botany, Carmichael Medical College. *Belgachia, Calcutta.*
1922 Feb. 1.	Rev. Fr. Pierre Johanns, B.Litt. (Oxon), Prof. of Philosophy, St. Xavier's College. *Calcutta.*
1922 Feb. 1.	Anantakrishna Sastri, Vedantabisharad. 57/1, *Sreegopal Mallick Lane. Calcutta.*
1924 Feb. 6.	W. Ivanow. 1. *Park Street. Calcutta.*
1924 Feb. 6.	Kamala Krishna Smrititirtha. *Bhatpara*, 24-*Parganas.*

* Re-elected for a further period of five years on 5-3-1924 under Rule 2c.

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LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

The following names will be removed from the next Member List of the Society under Rule 40.

1. J J. Campos. (1918.)
2. Lt.-Col. Sir G. S. Ranking. (1921.)
3. V. M. Galoostian. (1919.)

LOSS OF MEMBERS DURING 1925.

By Retirement.

Ordinary Members.

1. Ajit Mohan Bose. (1919.)
2. Siva Prasad. (1913.)
3. Chunni Lal Seth. (1923.)
4. D. H. Lees. (1918.)
5. H. N. Wright. (1894.)
6. A. C. Sen. (1919.)
7. Hira Lal. (1911.)
8. C. E. Luard. (1906.)
9. R. Watanabe. (1925.)
10. E. Marsden. (1905.)
11. Aroon Sinha. (1924.)
12. Shyam Shanker Dave. (1924.)
13. Banta Singh.
14. P. J. Hartog. (1921.)
15. Barad Shanker Bhattacharya. (1924.)
16. Ashan Ullah. (1924.)
17. C. J. Morris. (1924.)
18. A. B. Fry. (1923.)
19. Anandaji Haridas. (1924.)
20. Jyotis Ch Ghatak. (1921.)
21. G. de P. Cotter. (1907.)
22. I. H. Burkill. (1901.)
23. F. Wall. (1918.)
24. H. Beveridge. (1876.)
25. B. C. Mazoomdar. (1920) (withdrawn).

By Death.

Ordinary Members.

1. Pringle Kennedy. (1882.)
2. M. Shujat Ali Khan. (1908.)

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* *Rule* 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall, in the interval, have been received by the Society, his name shall be removed from the List of Members.

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3. James Dyer Tremlett. (1861.)
4. Baden H. Baden Powell. (1870.)
5. Mannu Lal. (1899.)
6. H.H. The Maharaja Sir Madho Rao Scindia. (1893.)

Honorary Fellows.

1. The Most Hon. Marquess Curzon of Keddleston. (1906.)
2. Sir Ramakrishna Gopal Bhandarkar. (1904.)
3. Sir Paul Vinogradoff. (1915.)

Ordinary Fellows.

1. D. B. Spooner. (1901/1915.)

Rule 40.

1. V. J. Esch. (1911.)

Rule 38.

1. A. W. Dentith. (1906.)
2. Lal Mayashanker Dube. (1919.)
3 Ghulam Mohiddin Sufi. (1919.)
4. Shyam Behari Misra. (1911.)
5. Kamakya Dat Ram. (1920.)
6. Hari Prasad Pradhan. (1920.)
7. Khusal Pal Singh. (1894.)
8. Murari Saran Mangalik. (1920.)
9. Padmaraj Jain. (1910.)
10 Bhagwat Datta. (1922.)
11. Aswani Kumar Sukla. (1916.)
12. Zafar Hasan. (1919)
13. Gopinath Sinha. (1921.)

ELLIOTT GOLD MEDAL AND PRIZE.

Recipients.

1893 Chandra Kanta Basu.
1895 Yati Bhusana Bhaduri, M.A.
1896 Jnan Saran Chakravarti, M.A.
1897 Sarasi Lal Sarkar, M.A.
1901 Sarasi Lal Sarkar, M.A.
1904 Sarasi Lal Sarkar, M.A.
1904 Surendra Nath Maitra, M.A.
1907 Akshoy Kumar Mazumdar.
1911 Jitendra Nath Rakshit.
1911 Jatindra Mohan Datta.
1913 Rasik Lal Datta.
1913 Saradakanta Ganguly.
1913 Nagendra Chandra Nag.
1913 Nilratan Dhar.
1918 Bibhutibhushan Dutta, M.Sc.
1919 Jnanendra Chandra Ghosh.
1922 Abani Bhusan Datta, M.A., Ph.D
1923 Bhailal M. Amin, B.A.

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BARCLAY MEMORIAL MEDAL.

Recipients.

1901 E. Ernest Green.
1903 Major Ronald Ross, C.B., C.I.E., F.R.C.S., F.R.S.
1905 Lt.-Col. D. D. Cunningham, C.I.E , F.R.S.
1907 Lt.-Col. A. W. Alcock, C.I.E., M.B., LL.D , F.R.S.
1909 Lt.-Col. David Prain, M.A., M.B., LL.D., F.R.S.,
1911 Dr. Karl Diener.
1913 Major W. G. Liston, C.I.E., M.D., I.M.S.
1915 J. S. Gamble, C.I.E., M.A., F.R.S.
1917 Lt.-Col. H. H. Godwin-Austen, F.R.S., F.Z.S., F.R.G.S.
1919 N. Annandale, D.Sc., C.M.Z.S., F.L.S., F.A.S.B.
1921 Lt.-Col. Sir Leonard Rogers, C.I.E., F.R.C.S., M.D., B.Sc., F.R.C.P., F.R.S.
1923 Lt.-Col. S. R. Christophers, C.I.E., O.B.E , M.B.
1925 Lt. Col. J. Stephenson, C.I.E., B.Sc., M.B., ch.B., F.R.C.S., F.R.S.E.

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Proceedings of the Ordinary Monthly Meetings, 1925.

JANUARY, 1925.

An Ordinary Monthly Meeting was held on Wednesday, the 7th, at 5-30 P.M.

PRESENT.

SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O., President, in the chair.

Members :

Abdul Latif, Saiyed
Abdul Wali, Maulavi
Agharkar, Dr. S. P.
Browne, Rev. L. E.
Chaudhuri, Dr. B. L.
Chopra, Dr. B. N.
Ghose, Mr. S. C.
Ghosh, Mr. T. P.
Hannah, Mr. H. Bruce
Hidayat Hosain, Dr. M.
Hora, Dr. S. L.
Mahfuzul Huq, Mr. M.
Manen, Mr. Johan van
Miles, Mr. W. H.
Mukherjee, Dr. Girindra Nath
Prashad, Dr. Baini
Rao, Mr. H. Srinivasa
Sarbadhikari, Sir Deva Prasad
Shastri, MM. Haraprasad

Visitor :

Paul, Karma Sumdhon.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of fifteen presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for as Ordinary Members :—

(1) *Banerjee, M. N.*, C.I.E., B.A., M.R.C.S., L.S.A., 32, Theatre Road, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : P. N. Banerjee.

(2) *Chaudhuri, Satyendra Mohan*, B.A., B.Sc., Sherpur Town P.O., Mymensingh.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(3) *Chaudhuri, Hementa Chandra*, Sherpur Town P.O., Mymensingh.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

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(4) *Chaudhuri, W. C. Nag,* M.A., Lecturer, Dacca University; 42, Nilkhet Road, P.O. Ramna, Dacca.
Proposer: B. L. Chaudhuri.
Seconder: Gopal Das Chaudhuri.

The General Secretary reported the loss of membership during the previous month by the resignation of :—
Ajit Mohan Bose (An Ordinary Member, 1919).

The President called for a ballot for the election as an Honorary Fellow of the Society of Prof. Sten Konow of Christiania, proposed for election by Council in the Monthly General Meeting of December 3rd, 1924. Prof. Sten Konow was declared duly elected.

The following papers were read :—

1. Johan van Manen.—*A Collection of Tibetan Proverbs.*

2. S. L. Hora.—*On the Habits of a Succeneid Mollusc from the Western Ghats* (with exhibits).

The President called upon the General Secretary to explain the exhibit of a collection of manuscripts belonging to the Society.

The President announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

—◇—

FEBRUARY, 1925.

An Ordinary Monthly Meeting was held on Wednesday, the 4th, at 7-15 P.M.

Present.

Mahamahopadhyaya Haraprasad Shastri, M.A., C.I.E., F.A.S.B., Philological Secretary, in the Chair.

Members :

Agharkar, Dr. S. P.
Das-Gupta, Mr. H. C.
Ghosh, Mr. T. P.
Hora, Dr. S. L.
Knowles, Major R.
Mahindra, Mr. K. C.
Manen, Mr. Johan van
Moreno, Dr. H. W. B.
Mitter, Mr. B. L.
Nawab Ali Choudhuri, The Hon'ble Nawab Saiyed
Prashad, Dr. Baini

The minutes of the last meeting were read and confirmed.

The following candidates were balloted for as Ordinary Members :—

(5) *Guha, B.S.*, M.A., Ph.D., 14, Badurbagan Road, Calcutta.
Proposer: B. L. Chaudhuri.
Seconder: Gopal Das Chaudhuri.

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(6) *Bose, Manmath Mohan*, M.A., Professor, Scottish Churches College ; 19, Gokul Mitra Lane, Hatkhola P.O., Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(7) *Dutt, Kiran Chandra*, 1, Lakshmi Dutt Lane, Baghbazar, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(8) *Menon, K. Ramunni*, Professor, Presidency College, Madras.
Proposer : S. L. Hora.
Seconder : Johan van Manen.

(9) *Bishop, Thomas Henry*, M.R.C.S., L.R.C.P., D.P.H., Chief Medical Officer, E.B. Ry. ; 2, Belvedere Park, Alipore, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

(10) *Watanabe, R.*, Manager, Japan Cotton Trading Co., Ld., 4/1, Lansdowne Road, Calcutta.
Proposer : Mesrovb J. Seth.
Seconder : Baini Prashad.

(11) *Bhor, Shyam Chand*, Accountant, Bhopal Chowk, Bhopal.
Proposer : S. L. Hora.
Seconder : H. W. Acton.

(12) *Sen-Gupta, Banamali*, Kaviraj, Kavyatirtha, Byakarantirtha, P.O. Goila, Dt. Barisal.
Proposer : C. W. Gurner.
Seconder : H. W. Acton.

(13) *Ganguly, J. N. C.*, M.A. Darshan-Shastri, 5, Russell Street, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

(14) *Singh, Banta*, M.B., B.S., Assistant Surgeon, Kapurthala State, Punjab.
Proposer : H. W. Acton.
Seconder : R. N. Chopra.

(15) *Bose, Debendra Nath*, 4-C, Paddopukur Road, Bhowanipore, Calcutta.
Proposer : Harit Krishna Deb.
Seconder : Ganapati Sircar.

(16) *Kuppaswamy, V. S.*, Assistant Conservator of Forests, Bellary, Madras Presidency.
Proposer : F. H. Gravely.
Seconder : Baini Prashad.

The General Secretary reported the death of :—

James Dyer Tremblett (An Ordinary Member, 1861).
Baden H. Baden-Powell (An Ordinary Member, 1870).

The General Secretary reported the loss of membership during the previous month by the resignations of :—

I. H. Burkill (An Ordinary Fellow, 1901).
B. C. Majumdar (An Ordinary Member, 1920).
Siva Prasad (An Ordinary Member, 1913).

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The General Secretary reported the transfer of the names of the following Members from the list of Ordinary Members to that of Honorary Fellows :—

Sir Thomas H. Holland (1891—1922).
Charles Rockwell Lanman (1887—1896).
Sir Leonard Rogers (1900—1922).

The General Secretary reported that, under Rule 40, the following names had been removed from the list of Members :—

H. G. Carter (An Ordinary Member, 1915).
H. P. Martin (An Ordinary Member, 1920).
C. F. H. Tacchella (An Ordinary Member, 1919).
B. A. White (An Ordinary Member, 1913).

The Chairman announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

—◇—

MARCH, 1925.

An Ordinary Monthly Meeting was held on Wednesday, the 4th, at 5-30 P.M.

PRESENT.

SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O., President, in the Chair.

Members :

Abdul Wali, Maulavi
Agharkar, Dr. S. P.
Chakravarti, Mr. Nilmani
Chaudhuri, Dr. B. L.
Chopra, Major R. N.
Ghosh, The Hon'ble Mr. Justice B. B.
Hidayat Hosain, Dr. M.
Iyer, Prof. L. K. A.
Manen, Mr. Johan van
Mitter, Mr. B. L.
Mookerjee, Mr. J. N.
Mukherjee, Dr. G. N.
Prashad, Dr. Baini
Ray, Mr. Sasadhar
Shastri, Mr. Asutosh
Shastri, MM. Haraprasad

Visitors :

Ghosal, Prof. Upendra Nath and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of forty-eight presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for election as Ordinary Members :—

(17) *Buyers, William Alexander*, M.I.C.E., Deputy Chief Engineer, E.I. Ry., E.I. Railway House, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : K. C. Mahindra.

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(18) *Sinha, Purna Chandra,* 146, Baranasi Ghosh Street, Calcutta.
Proposer : Baini Prashad.
Seconder : S. L. Hora.

(19) *Pochhammer, Wilhelm von,* Vice-Consul for Germany, 2, Store Road, Ballygunge, Calcutta.
Proposer : Baron Rudt von Collenberg.
Seconder : Sir R. N. Mookerjee.

(20) *Mitter, Profulla Chandra,* M.A., Ph.D., Professor, Calcutta University ; 22, Garpar Road, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(21) *Deb, Kshitindra,* Raja, Rai Mahasai of Bansberia Raj, 21-E, Rani Sankari Lane, Kalighat, Calcutta.
Proposer : Baini Prashad.
Seconder : S. L. Hora.

(22) *Benthall, E. C.,* 37, Ballygunge Park, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : Oswald Martin.

(23) *Das, Ajit Nath,* M.R.A.S., F.Z.S., 24, South Road, Entally, Calcutta.
Proposer : S. Mukerjee.
Seconder : K. C. Mahindra.

(24) *Banerjee, Abinash Chandra,* Rai Bahadur, M.A., 8-B, Lall Bazar, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Haq.

(25) *Ghosh, Ganendra Chandra,* Rai Bahadur, C.I.E., 2, Simla Street, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

(26) *Hossain, Mahammad Basheer,* M.A., B.T., Head Master, Woodburn M.E. School, 24, Musalmanpara Lane, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

(27) *Poddar, Hanuman Prashad,* 10-A, Central Avenue (South), Calcutta.
Proposer : Baini Prasad.
Seconder : S. L. Hora.

(28) *Chaudhuri, J.,* M.A., LL.B., Bar-at-Law, 34, Ballygunge Circular Road, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(29) *Batra, G. L.,* M.B., Ch.B., D.Ph., Asst. Director of Public Health (Bengal), Samavaya Mansions, Corporation Street, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Kiran Chandra Dutt.

(30) *Khurana, Tek Chand,* Phalera (B.B. & C.I.Ry.).
Proposer : Baini Prasad.
Seconder : S. L. Hora.

(31) *Bhatnagar, Jagmohan Lal,* M.A., Professor, Randhir College, Kapurthala.

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Proposer : R. Knowles.
Seconder : R. N. Chopra.

(32) *Mundkur, Bhalchandra B.*, M.A., Senior Assistant to the Special Cotton Mycologist, Cotton Research Laboratory, Dharwar.
Proposer : Baini Prasad.
Seconder : S. L. Hora.

(33) *Foskett, Ralph Cavan*, c/o The "Englishman", 9, Hare Street, Calcutta.
Proposer : Haraprasad Shastri.
Seconder : Johan van Manen.

The General Secretary reported the death of :—

Pringle Kennedy (An Ordinary Member, 1882).
D. B. Spooner (An Ordinary Member, 1901, and an Ordinary Fellow, 1915).

The General Secretary read an obituary notice of Mr. Pringle Kennedy. (*See page* clix.)

The General Secretary reported the loss of membership during the previous month by the resignations of :—

Gunvantry Chunilal Seth (An Ordinary Member, 1923).
D. H. Lees (An Ordinary Member, 1918).

The General Secretary reported that the election of :—

M. L. Agarwala (elected on 5-11-1924) had become null and void (Rule 9).

The General Secretary reported the constitution of the various Committees for 1925 to be as follows :—

Finance Committee.

President, General Secretary, Treasurer.

Mr. P. C. Mahalanobis.
MM. Haraprasad Shastri.
Mr. C. W. Gurner.
Mr. K. C. Mahindra.

Library Committee.

President, General Secretary, Treasurer.

Library Secretary.
Mr. C. W. Gurner.

Philological Committee.

President, General Secretary, Treasurer.

Philological Secretary.
Joint Philological Secretary.
Dr. Suniti Kumar Chatterji.
Dr. B. C. Law.
Prof. Mahfuzul Huq.
Mr. W. Ivanow.
Prof. Nilmani Chakravarty.

(The Committee to supervise the work of the Bibliotheca Indica.)

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Publication Committee.

President, General Secretary, Treasurer.

Philological
Joint Philological
Natural History (Biology)
Do. (Physical Science)
Anthropological
Medical
Library
} Secretaries.

The following papers were read :—

1. H. Bruce Hannah.—*Indian Origins.*

2. Sri Ram Sharma.—*A forgotten Hero of Marwar.*

3. D. N. Majumdar.—*The physical Characteristics of the Hos of Kolhan.*

4. Satyendra Roy.—*The Earth's electric Field and the vertical potential Gradient.*

The following exhibits were shown :—

1. Haraprasad Shastri.

(*a*) Rediscovered Sanskrit text of the 8th chapter of Shalihotra's treatise on horses.

(*b*) Adikarmavacana—a Mahayana work on rituals by Tatakaragupta of Vikramashila, 10th century A.D.

2. Johan van Manen.

Copy of a Tibetan blockprint of Avadanakalpalata, containing the Tibetan translation and the original Sanskrit text in Tibetan transcription.

3. W. K. Dods.

Specimen of white limestone bearing imprints of willow and walnut leaves found near the village of Basil in Balkistan, at an elevation of 12,500 feet, i.e. 2,500 feet higher than the present limit for these trees in that district.

The President announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

The President announced that he would give an At Home to the Members in the Society's Rooms on the 20th to meet His Excellency the Governor of Bengal.

APRIL, 1925.

An Ordinary Monthly Meeting was held on Wednesday, the 1st, at 5-30 P.M.

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PRESENT.

SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O., President, in the Chair.

Members :

Abdul Wali, Maulavi
Bhattacharjee, Babu Bisveswar
Biswas, Mr. K. P.
Brühl, Dr. P. J.
Chakravarti, Mr. Nilmani
Chatterji, Dr. Suniti Kumar
Chaudhuri, Dr. B. L.
Das-Gupta, Mr. H. C.
Ghose, The Hon'ble Mr. Justice C. C.
Konow, Dr. Sten
Law, Mr. S. C.
Manen, Mr. Johan van
Miles, Mr. W. H.
Mitter, Mr. B. L.
Mookerjee, Mr. J. C.
Mookerjee, Mr. P. N.
Moreno, Dr H. W. B.
Mukherjee, Mr. Braja Lal
Ray, Mr. Sasadhar
Rao, Mr. H. Srinivasa
Sarbadhikari, Sir Deva Prasad
Shastri, MM. Haraprasad

Visitors :

Mukherjee, Mr. J. N. and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of twenty-six presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for as Ordinary Members :—

(34) *Oaten, Edward Farley,* M.A., LL.B., I.E.S., Director of Public Instruction, Bengal; United Service Club, Calcutta.
Proposer : W. A. K. Christie.
Seconder : G. H. Tipper.

(35) *Jenaway, James Henry,* 6 & 7, Clive Street, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : J. N. Mookerjee.

(36) *Banerjee, Abhaya Charan,* M.A., Deputy Chief Engineer, Telegraphs, 27A, Ballygunge Circular Road, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

(37) *Laden La, Sonam Wangfel,* Sardar Bahadur, F.R.G.S., Indian Police, Darjeeling.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

(38) *Sharma, Sri Ram,* M.A., Professor, D.A.V. College, Lahore.
Proposer : U. N. Brahmachari.
Seconder : M. Hidayat Hosain.

(39) *Sarraf, B. L.,* B.A., LL.B., Sarrafa Bazar, Saugor, C.P.
Proposer : Hira Lal.
Seconder : U. N. Brahmachari.

(40) *Sadiq, Saiyed Mohammad,* Hakim, 11, Harinbari 1st Lane, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

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(41) *Sen, Benoy Chandra,* M.A., Professor, 7, Visvakos Lane, Baghbazar, Calcutta.
Proposer: B. L. Chaudhuri.
Seconder: Gopal Das Chaudhuri.

(42) *Mitter, B. P. D.,* B.A., B.Sc., 75, Chuckerbere Road, Elgin Road P.O., Calcutta.
Proposer: B. L. Chaudhuri.
Seconder: Gopal Das Chaudhuri.

(43) *Taraporewala, Irach J. S.,* B.A., Ph.D., Bar-at-Law, Professor, 77/9, Dhurrumtollah Street, Calcutta.
Proposer: Suniti Kumar Chatterji.
Seconder: Johan van Manen.
(44) *Hobbs, Henry,* 4, Esplanade East, Calcutta.
Proposer: G. H. Tipper.
Seconder: W. A. K. Christie.

(45) *Ismail, Abdulla Mohomed,* 21, Amratollah Lane, Calcutta.
Proposer: H. W. B. Moreno.
Seconder: Hem Chandra Das-Gupta.

(46) *Sales, Harold Spence,* M.I.E., Bridge Engineer, E.B.R., No. 2, Bungalow, Paksey.
Proposer: G. H. Tipper.
Seconder: W. A. K. Christie.

(47) *Aiyer, Rishiyur Sundara Venkatarama,* B.A., B.L., Secretary, Reform Flour Mills, Ld., Howrah.
Proposer: Hem Chandra Das-Gupta.
Seconder: M. Hidayat Hosain.

(48) *Prasad, Sri Durga Sadasiveswara, Sri Vasireddi, Raja Bahadur, Mannei Sultan, Garu,* Zemindar of Jayantipuram, Camp Nandigama, Dist. Kistna.
Proposer: Haraprasad Shastri.
Seconder: M. Hidayat Hosain.

(49) *Perier, His Grace the Most Rev. Dr. Ferdinand,* S.J., Archbishop of Calcutta, 32, Park Street, Calcutta.
Proposer: Sir R. N. Mookerjee.
Seconder: Johan van Manen.

The General Secretary reported that B. C. Majumdar had withdrawn his resignation.

The General Secretary reported the death of :—

The Most Hon. Marquess Curzon of Kedleston (An Honorary Fellow, 1906).

MM. Haraprasad Shastri read an obituary notice of Lord Curzon. (See page clx). The following resolution was unanimously adopted, all present standing :—

" This meeting records its deep sense of grief at the death of Lord Curzon and sends a message of condolence to the bereaved family."

Dr. Sten Konow read an obituary notice of Dr. D. B. Spooner, written by Mr. E. A. Horne. (See page clxi).

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The following resolution was passed unanimously, all present standing :—

"This meeting records its deep sense of loss at the death of Dr. D B. Spooner, gives expression to its esteem and affection, and offers its sincerest condolences to Mrs. Spooner".

The General Secretary reported the loss of membership during the previous month by the resignation of :—

Henry Nelson Wright (An Ordinary Member, 1894).

The General Secretary reported that the election of G. M. Tamkeen (elected on 3-12-1924), had become null and void (Rule 9)

The General Secretary reported that the Council had nominated MM. Haraprasad Shastri to serve on the Selection Committee, Kamala Lectureship, Calcutta University, 1925.

The General Secretary reported the receipt of a donation of Rs. 1,000 from Mr. W. K. Dods for the binding of books and manuscripts of the Society.

The General Secretary exhibited the following presentations :—

MM. Haraprasad Shastri.—MSS. Name Index to the Lalitavistara, and a rediscovered portion of the Sanskrit text of Shalihotra.

Mr. G. H. Tipper.—Tibetan Block print of the story of King Norba-Zangpo.

Sir George Grierson.—MSS. of two Kashmiri Works :—

(1) Shri Ramavatara Carita.

(2) Shri Krishnavatara Carita.

The President placed before the meeting for discussion the proposal of the Council to change the meeting day of the Society from Wednesday to Monday (Rule 64A).

Khan Sahib Abdul Wali submitted a statement of objections.

The following papers were read :—

1. Hem Chandra Das-Gupta.—*On the Occurrence of Scylla Serrata Forskal in the upper Tertiary Beds of Hathab, Bhavnagar (Kathiawar).*

2. Kalipada Biswas.—*Sub-aerial Algæ of Berkuda Island.*

3. D. N. Majumdar.—*Some Characteristics of Kolarian Songs.*

4. D. N. Majumdar.—*On the Terminology of Relationship of the Hos of Kolhan.*

5. Braja Lal Mukherjee.—*The Word Vra in Rig Veda.*

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6. J. J. Modi.—*A Note on the Custom of the Interchange of Dress between Males and Females.*

The President called upon MM. Haraprasad Shastri to explain the exhibit " A copper plate grant of Visvarupa Sena, 13th century A.D."

The President announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

—◇—

MAY, 1925.

An Ordinary Monthly Meeting was held on Wednesday, the 6th, at 5-30 P.M.

PRESENT.

MAHAMAHOPADHYAYA HARAPRASAD SHASTRI, M.A., C.I.E., Philological Secretary, in the Chair.

Members :

Abdul Wali, Maulavi
Chaudhuri, Dr. B. L.
Chopra, Dr. B. N.
Christie, Dr. W. A. K.
Das-Gupta, Mr. H. C.
Ghosh, Mr. G. C.
Ghosh, Mr. T. P.
Guha, Dr. B. S.
Hora, Dr. S. L.
Law, Mr. Satya Churn
Manen, Mr. Johan van
Mitter, Mr. B. P. D.
Mohomed, Mr. I. A.
Moreno, Dr. H. W. B.
Rao, Mr. H. Srinivasa
Sewell, Major R. B. S.

Visitors :

Chatterjee, Mr. Monmohan
Majumdar, Mr. Dhirendra Nath
and others.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of twenty-six presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for as Ordinary Members :

(50) *Ukil, Amulya Chandra*, M.B., Professor, National Medical Institute, 6/1, Kanklia Road, Ballygunge, Calcutta.
Proposer : J. W. D. Megaw.
Seconder : S. N. Bal.

(51) *Bose, H. M.*, B.A., Bar.-at-Law, 177, Lower Circular Road, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(52) *Abbasi, Mohammad Amin*, Lecturer, Chittagong Madrassah, Chittagong.

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Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

(53) *Kolah, K. S.*, 8, Dhurrumtollah Street, Calcutta.
Proposer : A. F. M. Abdul Ali.
Seconder : H. W. B. Moreno.

(54) *Baral, Gokul Chandra*, 8, Hidaram Banerjee Lane, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

(55) *Staub, Max*, Consul for Switzerland, 100, Clive Street, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

(56) *Inamdar, R. S.*, Professor, Benares Hindu University, Benares.
Proposer : S. P. Agharkar.
Seconder : G. H. Tipper.

(57) *Mukerjea, Jogendra Nath*, M.A., B.L., Advocate, Talla, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(58) *Jatia, Sir Onkar Mull*, Kt., O.B.E., 21, Rupchand Roy Street, Calcutta.
Proposer : Baini Prashad.
Seconder : Sir W. E. Greaves.

(59) *Wadia, D. N.*, M.A., B.Sc., F.R.G.S., F.G.S., Geological Survey of India, 27, Chowringhee, Calcutta.
Proposer : G. H. Tipper.
Seconder : W. A. K. Christie.

(60) *Bery, Atma Ram*, 43, Ripon Street, Calcutta.
Proposer : Baini Prashad.
Seconder : Johan van Manen.

(61) *Batra, Major Hargobind Lal*, M.C., I.M.S., c/o Messrs. Grindlay & Co., 54, Parliament Street, London, S.W. 1.
Proposer : Baini Prashad.
Seconder : S. L. Hora

(62) *Habibullah, The Hon'ble Sir Mohammed*, Khan Bahadur, Member for Education, Health and Lands, Government of India, Simla.
Proposer : Sir W. E. Greaves.
Seconder : Sir R. N. Mookerjee.

(63) *Ray-Chaudhury, Tarak Nath Kor*, Assistant Engineer, U.C.R., Udaipur, Mewar, Rajputana.
Proposer : S. L. Hora.
Seconder : H. C. Das-Gupta.

(64) *Khanna, Vinayak Lal*, 12, Shib Thakur Lane, Calcutta.
Proposer : S. L. Hora.
Seconder : H. C. Das-Gupta

(65) *Rao, Rao Bahadur M. Vinayak*, B.A., F.G.S., Assistant Superintendent, Geological Survey of India, 27, Chowringhee, Calcutta.
Proposer : H. C. Das-Gupta.
Seconder : G. H. Tipper.

(66) *Kōester, Dr. Hans*, Vice-Consul for Germany, 17/1, Store Road, Ballygunge, Calcutta.
Proposer : W. von Pochhammer.
Seconder : Johan van Manen.

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The General Secretary reported the loss of membership during the previous month by the resignations of :—

A. C. Sen (An Ordinary Member, 1919).
Hiralal (An Ordinary Member, 1911).

The General Secretary reported the election of U. C. Nag Chaudhuri (elected on 7-1-1925) had become null and void (Rule 9).

The General Secretary reported that intimation had been received of the death of M. Henri Cordier at the age of 75, and proposed that the meeting should send a message of condolence to the relations of the deceased.

The following papers were read :

1. C. J. George.—*Root sucking Aphids of Coimbatore.*

2. Chas. Hilton.—*The Amphipoda of Tali Sap.*

3. D. N. Majumdar.—*The traditional Origin of the Hos, together with a brief Description of the chief Bongas (Gods) of the Hos.*

4. Hem Chandra Das-Gupta.—*A few Types of sedentary Games prevalent in the Central Provinces.*

5. H. Chaudhuri.—*A Study of a Disease in the Garden Pea (Pisum sativum) due to selerotium rolfsii.*

6. Satya Churn Law.—*Local Names of some Birds of the Manbhum District.*

The Chairman announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

JUNE, 1925.

An Ordinary Monthly Meeting was held on Wednesday, the 3rd, at 5-30 P.M.

PRESENT.

Sir Devaprasad Sarbadhikari, Kt., M.A., L.L.D., Vice-President, in the Chair.

Members :

Abdul Wali, Maulavi
Bery, Mr. A. R.
Chaudhuri, Dr. B. L.
Chopra, Dr. B. N.
Christie, Dr. W. A. K.
Das-Gupta, Mr. H. C.
Das-Gupta, Mr. S. N.
Ghosh, Mr. T. P.
Hora, Dr. S. L.
Mitter, Mr. B. P. D.
Prashad, Dr. Baini
Raman, Dr. C. V.
Sewell, Major R. B. S.
Shastri, MM. Haraprasad

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Visitors :

Ray, Mr. Hemendra Nath Ribeiro, Mr. S.

The minutes of the last meeting were read and confirmed.

The Officiating General Secretary, Dr. W. A. K. Christie reported the receipt of twenty-four presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for election as Ordinary Members :

(67) *Singhania, Parshotamdas*, 3-1, Mangoe Lane, Calcutta.
Proposer : Chhotelal Jain.
Seconder : Johan van Manen.

(68) *Pancholy, Kesari Singh*, B.A., LL.B., Commissioner of Industries, Rewa State, C.I.
Proposer : S. L. Hora.
Seconder : Baini Prashad.

(69) *Gupta, Tara Prasanna*, M.A., 28-2-1, Akhil Mistry Lane, Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(70) *Richardson, Richard Hawkins*, 6 & 7, Clive Street, Calcutta.
Proposer : K. C. Mahindra.
Seconder : B. N. Mookerjee.

(71) *Musa, Moulavi Muhammad*, Khan Bahadur, M.A., Principal, The Madrassah, Madrassah Hill, Chittagong.
Proposer : Hidayat Hosain.
Seconder : W. A. K. Christie.

(72) *Walton, Eric Bell*, C.E., 93, Park Street, Calcutta.
Proposer : W. A. K. Christie.
Seconder : Hidayat Hosain.

(73) *Datta, S. K.*, B.A., M.B., Ch.B., Secretary, National Council, Y.M.C.A., 5, Russell Street, Calcutta.
Proposer : Baini Prashad.
Seconder : G. H. Tipper.

(74) *Lal, Budh Behari*, Rai Saheb., B.A., Ph.D., Head Master, Government High School, Naini Tal.
Proposer : Haraprasad Shastri.
Seconder : Hidayat Hosain.

The General Secretary reported the loss of membership during the previous month by the resignation of :—

C. E. Luard (An Ordinary Member, 1906).

The General Secretary reported the elections of Manmatha Mohan Basu, Banamali Sen-Gupta and V. S. Kuppaswamy (elected on 4-2-1925) had become null and void (Rule 9).

The General Secretary reported that G. L. Batra (elected on 4-3-1925), had withdrawn his application.

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The Chairman nominated Dr. Baini Prashad and Maulavi Khan Sahib Abdul Wali to be scrutineers of the voting papers with regard to the proposed change from Wednesday to Monday of the day fixed for Ordinary Monthly Meetings.

The General Secretary reported that the Council had nominated Dr. U. N. Brahmachari and Lt.-Col. J. W. D. Megaw to act in place of Major R. Knowles and Major H. W. Acton as Medical Secretary and Vice-President respectively.

The following papers were read :

1. B. C. Law.—*Gutama Buddha and the Paribrajakas.*

2. Durgadas Mukherjee.—*Digestive and reproductive Systems of the male Ant, Dorylus labiatus, Schuck.*

3. S. Ribeiro.—*Coleoptera of the Family Paussidae.*

The scrutineers reported that 107 valid votes had been cast in favour of the proposal and 23 against. The Chairman declared that the proposal was duly carried.

The Chairman announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

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JULY, 1925.

An Ordinary Monthly Meeting was held on Monday, the 6th, at 5-30 p.m.

Present.

Sir Rajendra Nath Mookerjee, K.C.I.E., K.C.V.O., President, in the Chair.

Members :

Banerjee, Mr. P. N.
Bhattacharyya, Mr. B.
Brahmachari, Dr. U. N.
Brown, Mr. Percy
Browne, Rev. L. E.
Chapman, Mr. J. A.
Chaudhuri, Mr. J.
Chopra, Dr. B. N.
Christie, Dr. W. A. K.
Hora, Dr. S. L.
Iyer, Mr. L. K. A.
Manen, Mr. Johan van
Mitra, Mr. J. C.
Mitter, Mr. B. P. D.
Mookerjee, Mr. P. N.
Moreno, Dr. H. W. B.
Mukherjee, Mr. Braja Lal
Mukherjee, Dr. G. N.
Raman, Dr. C. V.
Sewell, Major R. B. S.
Shastri, MM. Haraprasad
Sircar, Mr. Ganapati
Stapleton, Mr. H. E.
Wadia, Mr. D. N.
Walton, Mr. E. B.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of nineteen presentations of books, etc , which had been placed on the table for inspection.

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The following candidates were balloted for as Ordinary Members :

(75) *Rahman, Habibur*, Hakim, Chota Katra, Dacca.
Proposer : A. F. M. Abdul Ali.
Seconder : Hafiz Nazir Ahmad.

(76) *Bose, Manmath Mohan*, M.A., Professor, 19, Gokul Mitra Lane, Hatkhola P.O., Calcutta.
Proposer : B. L. Chaudhuri.
Seconder : Gopal Das Chaudhuri.

(77) *Varma, Sohan Lal*, Honorary Magistrate, P.O. Laharpur, Sitapur District.
Proposer : A. G. Shireff.
Seconder : Haraprasad Shastri.

(78) *Pandeya, Bhola Nath*, B.A., Professor, Krim Kund-Keena Rama Asthal, P.O. Shivala, Benares City, U.P.
Proposer : Haraprasad Shastri.
Seconder : M. Hidayat Husain.

The General Secretary reported the deaths of :—

His Highness Sir Madho Rao Scindia, Maharajah of Gwalior (A Life Member, 1893).

Mannu Lal (A Life Member, 1899).

The General Secretary reported the loss of membership during the previous month by the resignation of :—

R. Watanabe (An Ordinary Member, 1925).

The General Secretary reported that the election of Tek Chand Khurana and Bal Chandra B. Mundkur (elected on 4-3-1925) had become null and void (Rule 9).

The following papers were read :

1. Braja Lal Mukherjee.—*The Vratyas and their Sacrifices.*

2. Bimala Charan Law.—*Data from the Sumangala Vilashini.*

The following exhibits were shown :—

1. Haraprasad Shastri.—Two manuscripts :

(*a*) Collected works of Advayavajra.
(*b*) The Visnudharma.

2. Johan van Manen.—Three items of interest procured during a recent visit to Nepal :

(*a*) Gorkhagit Prakash.
(*b*) Two Sanskrit MSS. of Devapratimalaksanam.
(*c*) A collection of ten brass votive lamps.

The President announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

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AUGUST, 1925.

An Ordinary Monthly Meeting was held on Monday, the 3rd, at 5-30 P.M.

PRESENT.

SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O., President, in the Chair.

Members :

Basheer Hossain, Mr. Md.
Chapman, Mr. J. A.
Chatterji, Dr. S. K.
Chaudhuri, Dr. B. L.
Das-Gupta, Mr. H. C.
Fermor, Dr. L. L.
Ghosh, Mr. T. P.
Guha, Dr. B. S.
Mahfuzul Huq, Mr. M.
Manen, Mr. Johan van
Mitter, Mr. B. L.
Mitter, Mr. B. P. D.
Mukherjee, Mr. Braja Lal
Mukherjee, Dr. G. N.
Raman, Dr. C. V.
Rao, Mr. M. Vinayek
Sarbadhikari, Sir Deva Prasad
Sewell, Major R. B. S.
Shastri, MM. Haraprasad
Taraporevala, Mr. I. J. S.
Wadia, Mr. D. N
Walton, Mr. E. B.

Visitor :

Sen, Mr. Sukumar.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of twenty-one presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted for as Ordinary Members :

(79) *Tomar, Udai Vir Singh*, B.A., Teacher, R.P. High School, Panna, Bundelkhand, C.I.
Proposer : Haraprasad Shastri.
Seconder : M. Hidayat Hosain.

(80) *Reuben, David Ezra*, I.C.S. Collector, Balasore.
Proposer : Haraprasad Shastri.
Seconder : M. Hidayat Hosain.

(81) *Chhibber, H. L.*, Lecturer, University College, Rangoon.
Proposer : S. L. Hora.
Seconder : B. N. Chopra.

(82) *Pruthi, Hem Singh* Assistant Superintendent, Zoological Survey of India, Indian Museum, Calcutta.
Proposer : S. L. Hora.
Seconder : Baini Prashad.

(83) *Coyajee, J. C.*, B.A., LL.B., I.E.S., Professor, Presidency College, Calcutta.
Proposer : M. Hidayat Hosain.
Seconder : M. Mahfuzul Huq.

The General Secretary reported the loss of membership during the previous month by the resignation of :—

Aroon Sinha (An Ordinary Member, 1924).

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The General Secretary reported that the election of Sri Ram Sharma (elected on 1-4-1925) had become null and void (Rule 9).

The General Secretary reported that the names of the following members would be suspended as defaulters for a month, to be removed from the Society for non-payment unless the amount due were paid before the next Ordinary Monthly Meeting (Rules 37 and 38) :—

1. A. W. Dentith (1906).
2. Lal Maya Shanker Dube (1919).
3. Ghulam Moinuddin Sufi (1919).
4. Shyam Behari Misra (1911).
5. Kamakya Dat Ram (1920).
6. Hari Prasad Pradhan (1920).
7. Khusal Pal Singh (1894).
8. Murari Saran Mangalik (1920).
9. Padmaraj Jain (1910).
10. Bhagwat Dutta (1922).
11. Aswini Kumar Shukla (1916).
12. Zafar Hasan (1919).
13. Gopinath Sinha (1921).

The General Secretary reported that the Council submitted to the meeting for confirmation the following changes in the constitution of the Council made in the last Council meeting (Rule 45) :—

Treasurer : Dr. S. L. Hora, vice Dr. Baini Prashad, resigned.
Natural History Secretary (Biology) : Major R. B. S. Sewell, vice Dr. S. L. Hora.

The appointments were confirmed.

The General Secretary reported that the Council proposed Mr. H. Beveridge for election as an Honorary Fellow of the Society (Rule 13).

The following papers were read :

1. H L. Chhibber.—*Microscopic Study of the old copper Slags at Amba Mata and Kumbaria, Danta State, N. Gujerat, India.*

2 N. C. Mazumdar.—*Dacca image Inscription of the Reign of Lakshmana Sena.*

3. B. S. Guha.—*Preliminary Report on the Anthropometry of the Khasis.*

4 Hem Chandra Das-Gupta.—*Palaeontological Notes on the Panchet Beds at Deoli, near Asansol.*

5. Sukumar Sen.—*Notes on the Employ of the Cases in the Kathaka-Samhita.*

The General Secretary exhibited the Society's collection of Bible Editions (Fourteen in number).

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The President announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

NOVEMBER, 1925.

An Ordinary Monthly Meeting was held on Monday, the 2nd, at 5-30 P.M.

PRESENT.

SIR RAJENDRA NATH MOOKERJEE, K.C.I.E., K.C.V.O., President, in the Chair.

Members:

Abdul Wali, Maulavi
Acharya, Mr. Paramanand
Agharkar, Dr. S. P.
Bhattacharyya, Mr. Bisveswar
Bose, Dr. S. R.
Brown, Mr. Percy
Boral, Mr. G. C.
Chatterji, Dr. Suniti Kumar
Chaudhuri, Dr. B. L.
Das-Gupta, Mr. Hemchandra
Guha, Dr. B. S.
Hidayat Hosain, Dr. M.
Hora, Dr. S. L.
Kimura, Mr. R.
Manen, Mr. Johan van
Mitter, Mr. B. P. D.
Mohammad Yusuf, Mr. H.
Moreno, Dr. H. W. B.
Sarbadhikari, Sir Deva Prasad
Sewell, Major R. B. S.
Shastri, MM. Haraprasad
Singha-Roy, Rai Bahadur Lalit Mohan
Taraporevala, Mr. I. J. S.
Tipper, Mr. G. H.

Visitor:

Varugis, Mr. George

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of fifty-nine presentations of books, etc., which had been placed on the table for inspection.

The General Secretary reported that the following candidates had been elected as Ordinary Members during the recess months:

(84) *Bradshaw, Eric Jean*, B.A., B.A.I., F.G.S., Assistant Superintendent, Geological Survey of India, 27, Chowringhee, Calcutta.
Proposer: L. L. Fermor.
Seconder: W. A. K. Christie.

(85) *Sharif, Mohammad*, M.Sc., F.R.M.S., Lecturer, Muslim University, Aligarh.
Proposer: S. L. Hora.
Seconder: R. B. S. Sewell.

(86) *Hamid, Muhammad*, B.A., Asst. Superintendent, Archæological Survey, Central Circle, Patna.
Proposer: Ramaprasad Chanda.
Seconder: Hafiz Nazir Ahmad.

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(87) *James, Richard Congdon,* Dhoolie Tea Estate, Rangajan, Assam.
Proposer: T. E. Rogers.
Seconder: E. A. Andrews.

(88) *Mehta, Himmat Singh,* L.Ag., Maldas Street, Udaipur, Mewar.
Proposer: S. L. Hora.
Seconder: M. Hidayat Hosain.

(89) *Chaṭṭopādhyāya, Kshetreśa Chandra,* M.A., Lecturer, The University, Allahabad.
Proposer: S. L. Hora.
Seconder: M. Hidayat Hosain.

(90) *Gee, Edward Rowland,* B.A., Asst. Superintendent, Geological Survey of India, Calcutta.
Proposer: G. H. Tipper.
Seconder: W. A K. Christie.

(91) *Singh, Mohan,* M.A., Interpreter, High Court, Rangoon.
Proposer: S. L. Hora.
Seconder: Haraprasad Shastri.

(92) *Kimura, R.,* (Ko-Shi), Lecturer, Calcutta University; 22, Wellesley 2nd Lane, Calcutta.
Proposer: Johan van Manen.
Seconder: M. Hidayat Hosain.

(93) *Kuppaswamy, Valavanur Subramania,* M.A., F.L.S., I.F.S., Assistant Conservator of Forests, Bellary, S. India.
Proposer: F. H. Gravely.
Seconder: S. L. Hora.

(94) *Stocks, Mrs. C. de Beauvoir,* c/o Postmaster, Kalimpong, Bengal, India.
Proposer: W. Ivanow.
Seconder: M. Hidayat Hosain.

(95) *Acharya, Paramananda,* B.Sc., Archæological Scholar, Mayurbhanj State, P.O. Baripada.
Proposer: Johan van Manen.
Seconder: M. Hidayat Hosain.

The following candidates were balloted for as Ordinary Members:—

(96) *Kureishy, R. A.,* B.A., LL.B., "Noor-Manzil", Gurgaon, Punjab.
Proposer: M. Hidayat Hosain.
Seconder: Chhotelal Jain.

(97) *Crookshank, Henry,* B.A., Assistant Superintendent, Geological Survey of India, 27, Chowringhee, Calcutta.
Proposer: L. L. Fermor.
Seconder: W. A. K. Christie.

(98) *Ormond, Ernest Charles,* Barrister-at-Law, Bar Library, High Court, Calcutta.
Proposer: G. H. Tipper.
Seconder: W. A. K. Christie.

(99) *Sanaullah, Muhammad,* M.A., Professor, Presidency College, Calcutta.
Proposer: M. Hidayat Hosain.
Seconder: Johan van Manen.

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(100) *Mirza, M. B.*, 36/1A, McLeod Street, Calcutta.
Proposer: M. Hidayat Hosain.
Seconder: Johan van Manen.

The General Secretary reported the deaths of:—

M. Shujat Ali Khan (An Ordinary Member, 1908).
Sir Ramkrishna Gopal Bhandarkar (An Honorary Fellow, 1904).

MM. Haraprasad Shastri read an obituary notice of Sir R. G. Bhandarkar. (See page clxv.)

The General Secretary reported the loss of membership during the previous month by the resignations of:—

F. Wall (An Ordinary Member, 1918; an Honorary Fellow, 1921).
H. Beveridge (An Ordinary Member, 1876; an Ordinary Fellow, 1912).
Shyam Shanker Dave (An Ordinary Member, 1924).

The General Secretary reported the election of Tarak Nath Kor Ray-Choudhuri (Elected on 6-5-1925) Hakim Habibur Rahman and Bhola Nath Pandeya (Elected on 6-7-1925), had become null and void (Rule 9).

The President announced that the names of the following members, which, according to the announcement made in the previous Monthly Meeting, had since its date been suspended as defaulters within the Society's buildings, had been removed from the Society for non-payment (Rules 37 and 38):—

1. A. W. Dentith (1906).
2. Lal Maya Shanker Dube (1919).
3. Ghulam Moinuddin Sufi (1919).
4. Shyam Behari Misra (1911).
5. Kamakhya Dat Ram (1920).
6. Hari Prasad Pradhan (1920).
7. Khusal Pal Singh (1894).
8. Murari Saran Mangalik (1920).
9. Padmaraj Jain (1910).
10. Bhagwat Dutta (1922).
11. Aswini Kumar Shukla (1916).
12. Zafar Hasan (1919).
13. Gopinath Sinha (1921).

The General Secretary read an Obituary Notice of Sir Lucas White King. (See page clxiv.)

The President called for a ballot for the election as an Honorary Fellow of the Society, of Mr H. Beveridge, a retired Member and an Ordinary Fellow, proposed for election in the Ordinary Monthly Meeting of August 3rd, 1925 (Rule 13). Mr. Beveridge was duly elected.

The General Secretary reported that the Council submitted for confirmation to the meeting the following change in the composition of the Council made in one of the Council Meetings held since the last Ordinary Monthly Meeting (Rule 45).

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Member of Council: Mr. H. E. Stapleton, vice Dr. P. J. Brühl resigned.

The appointment was confirmed.

The General Secretary reported that, in accordance with Rule 48A, the Council since the last Monthly Meeting had passed a revised set of Regulations regarding the election of Fellows, as follows :—

1. The General Secretary of the Asiatic Society of Bengal for the time being shall be *ex-officio* Secretary to the body of Fellows and the channel of communication between the Fellows and the Council of the Society. In his capacity as General Secretary, he shall attend and act as Secretary to the meetings of Fellows prescribed in the Regulations, without as such, participating in discussions or voting. The General Secretary shall hand over and report on the votes and nominations received by him to the meeting referred to in Regulation 13.

2. Blank nomination papers shall be sent out by the General Secretary to each Fellow not later than the 15th of July of the year preceding the election.

3. Nomination papers must be received back by the 1st of October, duly filled in and signed, and addressed to the General Secretary, and no paper received after this date shall be considered.

4. There shall be a meeting of Fellows in the second week before the issue of the blank nomination papers, one week's notice of which shall be given by the General Secretary to the Resident Fellows. At this meeting, matters of concern to the Fellows shall be generally considered and recommendations or suggestions may be drawn up for communication to the Fellows together with the blank nomination papers.

5. A Fellow may nominate only one candidate; plural nomination by a Fellow shall invalidate all his nominations.

6. Each candidate shall be nominated by at least two Fellows, one at least of whom shall certify that he is personally acquainted with the scientific or literary work of the candidate he proposes and is in a position from his own knowledge to express an opinion on its value, and he shall set out in detail the qualifications of the candidate, including detailed references to his most important published original papers, stating date and place of publication, and in case of publication in a serial, the name and the volume number of the latter.

The tenure of an Office on the Council of the Society shall not be considered a qualification.

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7. The returned nomination papers shall be open to inspection by any Fellow in the Society's Rooms. Before the 7th of October, any Fellow shall be at liberty to add his signature, or to authorize in writing the General Secretary to add his name in support of any candidate already nominated by two Fellows.

8. There shall be a meeting of Fellows within the fortnight preceding the 7th of October, one week's notice of which shall be given by the General Secretary to the Resident Fellows. At this meeting, matters of concern to the Fellows shall be generally considered and the returned nomination papers shall be scrutinised for technical faults. It shall be competent to the meeting to remedy any such faults to prevent invalidation on this account alone.

9. Any candidate who canvasses for support in his candidature shall be disqualified for election. Any such action shall be reported to the meetings of Fellows.

10. A list of the persons duly nominated, with their qualifications, shall be compiled from the nomination papers by the General Secretary, printed as a voting paper, and sent out to each Fellow not later than the 1st of November. The number of vacancies shall be stated.

11. The Fellow shall then vote for not more than the number to be elected in the succeeding year by placing a cross against the names of those he wishes to be elected, and no paper with more crosses than vacancies shall be accepted.

12. The voting paper shall be enclosed, unsigned, in a sealed envelope, which shall be forwarded to the General Secretary in an outer cover, with a covering letter signed by the Fellow, so as to reach the Society by the 31st of December. In the absence of a covering letter, a voting paper shall be invalid.

13. There shall be a meeting of Fellows in the first week in January, one week's notice of which shall be given by the General Secretary to the Resident Fellows. At this meeting, the sealed envelopes mentioned in Regulation 12 shall be opened, and the voting papers counted as the Chairman (the Senior Fellow present) directs, and the names of such candidates as receive at least three fifths of the votes of the Fellows voting shall be placed before the meeting. The meeting shall also be competent to generally consider matters of concern to the Fellows.

14. If more than the maximum number to be elected have received a qualifying number of votes, those receiving the highest number of votes, shall be declared selected. In the

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event of a tie for the last vacancies, the Fellows present at the meeting shall decide which of the candidates receiving the same number of votes shall be selected.

15. The list of names declared selected under these Regulations shall be submitted to the Council at their January meeting for recommendation to the Society for election to Fellowship.

16. The Council shall have power to delete any name from the list mentioned in Regulation 15.

17. Voting papers for the election of the candidates approved by the Council shall be provided for each member present at the Annual Meeting in February to record his vote for or against each candidate.

18. The manner of election shall be as follows :—

(*a*) Two scrutineers shall be appointed by the Chairman with the approbation of the majority of the Members present.

(*b*) Each Member voting shall deliver his voting paper unsigned, but folded, into one box, and a form bearing a certificate that he has recorded his vote into another.

(*c*) The scrutineers, after counting the voting papers and certificates, shall, if they correspond in number, proceed to examine the voting papers and report to the President the names of those having a majority of votes, and these names shall be announced from the Chair.

(*d*) In the case of the number of certificates being different from that of voting papers, the election shall be null and void and a fresh election shall immediately be held.

(*e*) The scrutineers shall have power to reject voting papers as void for uncertainty.

These regulations were confirmed.

The General Secretary reported that, the Council since the last Monthly Meeting had passed a set of Regulations regarding General Lectures (Rule 48A), as follows :—

1. The Council shall arrange for the delivery of up to four general lectures annually, to be held in the Society's rooms, and during the winter season, between the first of November and last of March.

2. The lectures shall be designed to convey instructive and interesting information in attractive form to a general culture

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audience, not necessarily composed of specialists in the subjects treated of in the lectures. The purpose of the lectures is to awaken interest in and draw attention to the work of the Society.

3. Attendance at the lectures shall be open to all members of the Society, and to such non-members as are invited to them by the Council on their own initiative, on the recommendation of members, or at the request of non-members desiring to attend.

4. The lectures shall embrace all subjects investigated by the Society, but even representation of (scientific and literary) subjects shall be striven after.

5. The lectures may be either made to serve to communicate, to a general cultured public, summaries of specialist knowledge, i.e., intelligent popularisation, or the announcement or exposition of new results, either in the nature of new discovery or new theory.

6. Lecturers shall be invited to deliver their lectures by the Council, but offers to lecture shall be received and considered by the Council, and the lecturers shall not be confined to members of the Society only.

7. Lecturers shall be chosen with strict consideration of their special competence in the subject of their lectures as well as of their skill as public speakers and ability to interest and instruct.

8. Lectures may be held with or without the aid of lantern slides, demonstrations or exhibits.

9. The Council may invite the lecturers to offer their lectures for publication in a special A.S.B. General Lecture Series.

10. In case of publication of the lectures in the above mentioned Series, they shall be printed as uninterrupted, continuous, non-technical texts, to which, however, the author may add, in the form of appendices, any technical notes, references, bibliographies or other explanatory material he thinks desirable.

11. Record shall be kept of the lectures, and notice of them shall be given beforehand to all Resident Members.

12. Nothing in the above Regulations shall prevent deviation from any prescription in any of them, after due decision to that effect arrived at by the Council, on consideration of special circumstances.

These regulations were confirmed.

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The General Secretary reported that, in accordance with Regulation 4, regarding the award of the Barclay Memorial Medal, the Council had appointed a Special Committee for the current year, as follows :—

Major R. B. S. Sewell (Natural History Secretary) *Ex-officio.*
Mr. G. H. Tipper.
Dr. P. J. Brühl.
Dr. U. N Brahmachari.
Major H. W. Acton.

The General Secretary reported that H.M. the King of the Belgians, accompanied by H.E. the Governor of Bengal and staff, had paid a visit to the Society, on the 16th September.

The following papers were read :—

1. N. B. Sanyal.—*The Predecessors of the Gahadavalas.*

2. Paul Brühl and Kalipada Biswas.—*The Algae of Loktak Lake.*

3. H. Hosten.—*A Manuscript Tamil Grammar by Fr. C. J. Beschi, S.J.*

4. Harit Krishna Deb.—*Mede and Madra.*

The following exhibits were shown :

1. Abdul Wali.—A Bengali Book written in Persian Script.
2. Percy Brown.—A sample of modern Persian Micro-Calligraphy.

The President announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

DECEMBER, 1925.

An Ordinary Monthly Meeting was held on Monday, the 7th, at 5-30 p.m.

Present.

Mahamahopadhyaya Haraprasad Shastri, M.A., C.I.E., Philological Secretary, in the Chair.

Members :

Abdul Wali, Maulavi
Agharkar, Dr. S. P.
Basheer Hossain, Mr. Md.
Belvalker, Dr. S. K.
Bhattacharjee, Mr. Bisveswar
Biswas, Mr. K. P.
Brahmachari, Dr. U. N.
Brühl, Dr. P. J.
Chanda, Mr. R. P.
Chapman, Mr. J. A.
Christie, Dr. W. A. K.
Hannah, Mr. H. Bruce
Hidayat Hosain, Dr. M.
Insch, Mr. Jas.
Jain, Mr. C. L.
Manen, Mr. Johan van
Mitter, Mr. B. P. D.
Mohammed Yusuf, Mr. H.
Mukherjee. Dr. G. N.
Mukherjee, Mr. Jogendra Nath
Raman, Dr. C. V.
Rao, Dr. H. Srinivasa

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Chaudhuri, Dr. B. L.
Das-Gupta, Mr. H. C.
Ghosh, Mr. T. P.
Guha, Dr. B. S.
Seth, Mr. M. J.
Sewell, Major R. B. S.
Stapleton, Mr. H. E.
Tipper, Mr. G. H.

Visitors :

Majumdar, Dr. D. N.
Sen, Mr. J.
Stocky, Mr. J. N.
Vadekar, Mr. D.

The minutes of the last meeting were read and confirmed.

The General Secretary reported the receipt of twenty presentations of books, etc., which had been placed on the table for inspection.

The following candidates were balloted as Ordinary Members :

(101) *Varugis, George*, B.Sc., Assistant Superintendent, Zoological Survey of India ; 33-1, Amherst Street, Calcutta.
Proposer : R. B. S. Sewell.
Seconder : S. L. Hora.

(102) *Derviche-Jones, Arthur Daniel*, Lt.-Col., D.S.O., M.C., Solicitor, United Service Club, Calcutta.
Proposer : L. L. Fermor.
Seconder : W. A. K. Christie.

(103) *Bhasin, Malik Ram*, Kaviraj, Peshawarian Street, Rawalpindi.
Proposer : S. L. Hora.
Seconder : M. Hidayat Hosain.

(104) *Carritt, Stanley Ernest*, c/o Messrs. Thacker Spink & Co., 3, Esplanade, Calcutta.
Proposer : E. B. Walton.
Seconder : S. L. Hora.

(105) *Narayanaswami, V.*, M.A., Offg. Curator of the Herbarium, Royal Botanical Gardens, Sibpur.
Proposer : H. Srinivasa Rao.
Seconder : S. L. Hora.

(106) *Afzal, Saiyed Mohamad*, Khan Bahadur, Offg. Civil Surgeon, Bihar and Orissa Medical Service, P.O. Mahendru, Patna.
Proposer : A. F. M. Abdul Ali.
Seconder : Johan van Manen.

(107) *Lindsay, James Hamilton*, I.C.S., Secretary to the Government of Bengal (Edn. Dept.) ; Calcutta Club, 241, Lower Circular Road, Calcutta.
Proposer : Sir R. N Mookerjee.
Seconder : B. N. Mookerjee.

(108) *Stark, Leonardus*, c/o The Netherlands India Commercial Bank, Dalhousie Square, Calcutta.
Proposer : Sir R. N. Mookerjee.
Seconder : Johan van Manen.

The General Secretary reported the loss of membership during the previous month by the resignation of :—

S. R. Das (An Ordinary Member, 1924).
Banta Singh (An Ordinary Member, 1925).

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P. J. Hartog (An Ordinary Member, 1921).
Barada Sankar Bhattacharyya (An Ordinary Member, 1924).
Ahsan Ullah (An Ordinary Member, 1924).

Dr. P. J. Brühl read an obituary notice of Dr. J. S. Gamble. (See page clxvi).

The following papers were read :—

1. Paul Brühl and Kalipada Biswas.—*Algae of Loktak Lake.*

2. B. C. Law.—*Anga and Campa in Pali Literature.*

3. Johan van Manen.—*A Note on the Wild Men of Tibet.*

The following exhibits were shown :—

1. R. B. S. Sewell.—Prehistoric Remains from Baluchistan.

2. Haraprasad Shastri.—A Genealogical Tree of the Vallabha Sect.

3. Johan van Manen.—A Faked Vase.

The Chairman announced the results of the ballots for the election of Ordinary Members and declared that all candidates were duly elected.

The Chairman announced that the first general lecture of the season had been fixed for Wednesday, the 16th, at 6-15 p.m :

Lecturer : Dr. J. Ph. Vogel.

Subject : The Buddhist Remains of Java.

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Obituary Notices.

Pringle Kennedy.

(—1925.)

Mr. Pringle Kennedy was one of the oldest Ordinary Members on our list, sixth in rank of seniority, having joined in 1882.

Though he did not take any specially active part in the work of the Society, he was one of its distinguished members and a conspicuous landmark of an older generation. His memory should be perpetuated in our records, and the following appreciation is extracted from an obituary notice which appeared after his death in a local paper as a testimony to the worth of his character, the giftedness of his nature and his wide interests and culture.

Mr. Pringle Kennedy, a Vakil of the High Court of Bihar, and since recently a Companion of the Most Eminent Order of the Indian Empire, was respected by Europeans and Indians alike for his legal knowledge, his uprightness and his manly independence. He was neither ambitious nor mercenary.

His activities were not confined to forensic field. He was above all a scholar. He took Euripides with his *chota-hazri* and Catullus as an *aperitif*, while, in his lighter moments, he traced curves at infinity and dallied with the integral calculus. Up to the very last, he quoted Dante, read his French and Italian novels and gibed at the " uncoguid " who, in literature, lost the beauty of the wood in the close contemplation of a few misshapen trees.

He himself also contributed to the world's literature. His History of the " Moguls " was—to his astonishment, for he was always modest—quoted to him in a remote village in France by one of the *cognoscenti*, and there is reason to believe that he contemplated a new edition.

In the Legislative Council, to which he was specially nominated, his work on the Champaran Agrarian Act and the Tenancy Act Revision Bill was characterised by a wide knowledge and a fearless exposition. His early experience in educational matters, for he had been a professor, rendered him a valuable member of the Senate of the University and of the governing bodies of various local institutions, while he was also President of the Bihar branch of the European Association.

And on the social side of his life, he will not be lightly missed. His arrival used to be the presage of a fund of

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anecdote of men, women and places, some unknown to the present generation, and some forgotten till revivified by a kindly and tenacious memory.

JOHAN VAN MANEN.

(Read in the Ordinary Monthly Meeting, 4th March, 1925.)

LORD CURZON.

(1859—1925.)

The announcement of the death of Lord Curzon of Kedleston was received in the Asiatic Society of Bengal with great grief. The old members feel it as a personal loss. Lord Curzon always took a warm interest in the affairs of the Society. He was present in three of its Annual Meetings and he chose the Hall of the Society to deliver his epoch-making speech on the reorganization of the Archæological Department and the enactment for the protection of Ancient Monuments.

He attended the Society's Annual Meeting in 1899 and 1900 during the first years of his period as Viceroy, and again in 1905 at the close of his term of office.

The remarks made by him on the occasion of his first attendance are recorded in the Proceedings of the Society for 1899 and are reprinted below, exactly a quarter of a century after their delivery.

His Excellency the Viceroy said it gave him great pleasure to be present on that occasion. He had come there not in his official garb as Patron of the Society, but as a student and writer who had himself profited by its publications, and who was intensely interested in its work and welfare.

As regards the work of the Asiatic Society of Bengal, although he knew that it consisted mostly of voluntary effort and that they did not spurn the help of amateurs, he yet did not personally regard its actions as the mere academic exercise of students. He looked upon it rather as part of a duty which we owed to India. Planted as we had been by Providence upon the throne of the Indies we were trustees for the world of a literature, an archæology, a history and an art that were among the priceless treasures of mankind. For nearly 3,000 years there had been a succession of kingdoms, dynasties, races and religions in India, all of them bearing relics of some sort, many of them relics of the highest value, which it was incumbent upon us to examine, to elucidate and to converse. It was sometimes said that officials in India had nowadays no time for independent study or research. "No time" was always the excuse of idleness, and the busiest man was usually he who had most time at his disposal. He did not therefore

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accept that plea as an excuse for any relaxation in the efforts which so many distinguished members of the Society had made in the past, and during his term of office he meant to do whatever lay in his power to encourage research, to promote study, and to safeguard the relics of the past as a part of our imperial obligation to India.

The remarkable address on "Ancient Monuments in India" delivered next year, 1900, is to be found in full in the Proceedings of the Society for 1900.

Lord Curzon often helped the Society financially for the repairs of its building and the purchase of MSS. He set a high value on its publications and explained on one occasion how he made use of our Journal in his younger days. The experiences concerning Buddhist life and Buddhist ceremonies of Prof. Bendall and MM. Shastri on their return from Nepal in 1899 were all corroborated by his Lordship from his personal experiences in Korea.

The Society was assured that no good project for the advancement of learning need be given up for want of support as long as Lord Curzon was Viceroy. He once paid a surprise visit to the Society to see how it usually worked, and he wanted to see it take its place among the great places of learning and research in the world.

He accepted the office of Patron of the Society whilst Viceroy of India from 1899 to 1905, and was elected an Honorary Fellow in 1906. As late as 1923 he still communicated with the Society's office, indicating his sustained interest in its affairs.

HARAPRASAD SHASTRI.

(*Read in the Ordinary Monthly Meeting, 1st April, 1925.*)

D. B. SPOONER.

(1879—1925.)

The death occurred at Agra on the 30th of January last of David Brainerd Spooner, O.B.E., Ph.D., Deputy Director-General of Archæology in India, and a distinguished Fellow of this Society.

Dr. Spooner, who was only 46 at the time of his death, was appointed to the Archæological Survey in 1906, and had held his present post since 1919—having also, on more than one occasion, officiated as Director-General for Sir John Marshall, when the latter was ill or on leave. Valuable though the services were which he rendered as co-adjutor to Sir John Marshall in his editorial and administrative capacities, there were those who regretted keenly that, for the time being, he was

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lost to the archæological field-work wherein he had exhibited such remarkable gifts, and among the notable records of which in India (with its select roll of distinguished workers) he had won for himself an imperishable place. Dr. Spooner's first appointment was as Superintendent of the Frontier Circle; and it was here that, among other treasures of Gandhara, he made his sensational discovery of the Great Stupa of Kanishka, containing the authentic relics of the Buddha mentioned by Hiuen Tsang. In 1910 he was posted to Patna as Superintendent of the Eastern Circle of the Archæological Survey; and except for a short period of leave, which was interrupted by the outbreak of the War, Patna was his home for the next ten years. These were probably the happiest, as they were certainly the most fruitful, of his years in India. At three centres of first class importance—Vaisali, in the Muzaffarpur district, Kumrahar and Bulandibagh (the site of the ancient Pataliputra), and Nalanda (the "Oxford of Buddhist India") he carried out excavations of the greatest archæological and historical value. It is well known that Dr. Spooner believed that, at Kumrahar, he had made a discovery which opened an entirely new chapter in Indian history. This was the discovery of a striking parallelism (starting with a vast pillared hall on the model of the throne-room of Darius, the Hall of a Hundred Columns) between the whole lay-out of Chandragupta's palaces and that of Persepolis. Fired by this discovery, Dr. Spooner proceeded to examine the Mahabharata and other literary sources to see whether any support could be found for the archæological evidence for a Persian origin of the Maurya capital. The results of his preliminary enquiry were published (perhaps, somewhat prematurely) in the J.R.A.S. of January and July, 1915, under the title of "The Zoroastrian Period of Indian History"—a title for which Dr. Spooner wished afterwards to substitute "The Magian Period." These results were startling enough, pointing as they did to a Persian origin for the Nandas, the Mauryas and Gautama Buddha himself. Such a revolutionary body of doctrine was unlikely to win ready acceptance; and the volume which was promised, embodying his maturer views, has not yet appeared. In view, particularly, of more recent developments, the publication of this volume (which, it is understood, Dr. Spooner had all but completed) will be eagerly awaited. It is a matter of poignant regret that Dr. Spooner should not have lived to participate in the unfolding of the remarkable evidence of an ancient Indian culture brought to light at Harappa. Already it seems certain that it will be necessary to re-examine Dr. Spooner's discoveries at Pataliputra, and the daring speculations which they suggested to him, from an entirely new angle.

Right or wrong, however the path of the pioneer in new and strange doctrines is a hard one; and what Dr. Spooner

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suffered was magnified a hundred times by his shy but proud and abnormally sensitive nature. It was not the honest scepticism of scholars which wounded him, much as it may have disappointed him. Nor was it the vulgar legend that since Sir Ratan Tata had found the money for the Pataliputra excavations, it was merely a commercial *quid pro quo* to ascribe the glories of Chandragupta and his capital to the Parsis of old. This would have been cruel, if it had not been ridiculous. But it was the insinuation, the *suggestio falsi*, that the scholar who put forward such a theory was prompted by a foreigner's unconscious desire to belittle the character of India's indigenous culture—it was this that hurt beyond bearing. Indeed, it is the sad truth, we fear, that the pain of it embittered his later years and clouded the joy in his work which was so characteristic of him. For here was a man who, with that singleness of purpose which the scholar shares with the artist and the saint, had devoted his life, from his very boyhood, to India's classical culture. Born in far away America, of New England stock, he had entered himself as an undergraduate at Leland Stanford University in California, because Stanford was the one college in America where a mere undergraduate could take up the study of Sanskrit. After graduation from Stanford he went to Japan, where he studied Sanskrit in the Imperial University of Tokyo. From Japan he came as a student to Benares, the classical home of Sanskrit learning. This was his apprenticeship in his chosen field of letters. Returning to Harvard, he took his Ph.D. degree under Lanman, of whose great kindness to him he never tired of talking. From Harvard he went to Berlin; and it was here, in 1906, that he received an offer of an appointment in the Archæological Survey of India. He was a scholar, then, of the East and of the West; but the bent of his mind was always in the one direction—India, and India's classical culture; and it was to India he gave so abundantly of the treasures of a richly stored mind and the enthusiasms of an ardent and imaginative nature.

Apart from his work—his Sanskrit and his Archæology—Spooner had three great passions, his languages (Japanese, Chinese, Spanish, French—to mention but a few of his favourites), good talk, in which he excelled, and flowers. His talk revealed the very best of him—the warmth of his interests, the distinction and the limpid clearness of his thought, and above all a gay and unquenchable humour, a humour that was never happier than when it was poking fun at himself. One felt that, as he talked, he warmed both hands before the fire of life; and one put out one's own hands to be warmed, too. He had a great sense for and love of style, in talk as in the written word. He made phrase-books for his own use, in a number of his favourite languages, on the backs of countless visiting-cards; and these he regularly conned. A recreation of his in recent years was

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the rendering into delicate, accomplished, English verse of the work of modern Urdu poets; and we hope that this small anthology of his will be published. As for flowers, his passion for them was one with his love for all beautiful things—whether fashioned by God's hand or man's.

No account of Spooner's life and work in India, however short, is complete without a reference to his wife—the accomplished scholar and linguist, who from the time of their marriage in 1911 (they had sat together at the feet of Lanman in the Sanskrit seminary at Harvard) shared all his interests, all his enthusiasms, and all his trials. It is thought by some that a scholar's life is lacking in romance. Spooner's was full of it; but the greatest romance in his life, and the most enduring, was his marriage.

E. A. Horne.

(Read by Dr. Sten Konow in the Ordinary Monthly Meeting, 1st April, 1925.)

Sir Lucas White King.

(1856—1925.)

Sir Lucas White King was connected with the Society from 1861 to 1903, covering nearly the whole of his period of varied service in the East, as a member, and during the last few years as the Editor and Translator of Sa'dī's Odes in the *Bibliotheca Indica*. His strenuous official duties in the Punjab, Mysore, Waziristan, Kohat and elsewhere, did not prevent him from following with conspicuous success his natural inclinations for, and applying his aptitude to, archæological, historical, linguistic and numismatic study. After his retirement from the Indian Civil Service in 1905 he returned Home, and held the Chair of Arabic, Persian and Hindustani at Trinity College, Dublin, till 1922. His earlier scholarly interests seem to have been largely numismatic, and his private collection of coins, which was sold by public auction in Amsterdam in 1904, has been described in a well-illustrated catalogue registering over 6,000 numbers. In 1919 Sir Lucas began his edition of the Odes of Sa'dī in the *Bibliotheca Indica*. It was his ambition not only to give a critical edition of their major portion, the Tayyibat, containing over 400 odes, but of the three other groups as well, containing slightly less than 300 further pieces. The scholar's death has now rendered impossible the completion by himself of these labours, and what was meant to be only a first volume has become the final work. Sir Lucas King also intended to supplement his edition by an English translation, also to be published in the *Bibliotheca Indica*. Seven

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ty-one odes were already set up in type and corrected, waiting for print order, when a chain of unfortunate circumstances raised obstacles. In his love for his subject, the deceased scholar reckoned too little with the practical possibilities of typography and the limitations imposed by correction of proofs at a distance. Misunderstandings arose, which led to the abandonment of the work. This was a bitter disappointment to Sir Lucas King, as to ourselves, and the correspondence about this matter was at times delicate. In subsequent letters, Sir Lucas King wrote most cordially and generously on the subject. It is a happy fact that in one of his last letters to the office he could state "I cannot thank you enough for all you have done for me. With every good wish, yours sincerely," etc. This was a worthy ending to a scholar's difference, especially as there was entire mutual esteem. Having handled Sir Lucas King's copy, carefully prepared as it was, and complete, I would express the hope that a literary executor may be found to edit the posthumous MSS., the publication of which will be a gain to Persian Studies and enhance Sir Lucas' reputation. Respectfully and affectionately we salute the memory of the deceased scholar.

JOHAN VAN MANEN.

(Read in the Ordinary Monthly Meeting, 2nd November, 1925.)

SIR R. G. BHANDARKAR.

(1837—1925.)

The death of Sir R. G. Bhandarkar removes an ardent and earnest worker in the field of Oriental research and Sanskrit scholarship. He was the connecting link between the great savants of the past generation, like Max Müller, Hofrath Buhler, Bhawanlal Indraji, Raja Rajendra Lal Mitra, and the scholars of the present generation. He held his own in the generation in which he lived and he inspired those who came after him. His tall, well-built person inspired awe and veneration. The Bombay people are grateful to him for his School and College books which did a great deal to make that difficult language, Sanskrit, easy of access. But his fame rests on more solid work of scholarship. Six volumes of his Catalogues of Sanskrit MSS. will ever remain a monument of hard scholarly work. They brought to light not only hundreds of valuable MSS. but also several branches of Sanskrit Literature hitherto but imperfectly known. He was always accurate in his research and authoritative in his opinions. His Wilson Lectures rendered a service to Indian philology, the value of which can scarcely be overrated. Every one of his numerous papers in the

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Journal of the Bombay Branch of the Royal Asiatic Society, contained a pronouncement on some disputed point of Indian History, Indian Literature or Indian thought. His History of the Deccan is the earliest work on modern lines on Indian History and its value as a piece of research will never be diminished.

HARAPRASAD SHASTRI.

(Read in the Ordinary Monthly Meeting, 2nd November, 1925.)

J. S. GAMBLE.

(1847—1925.)

By the recent death of James Sykes Gamble, Indian Botany has experienced a distinct loss. Gamble was born in London on July the 2nd, 1847. He received his education at the Royal Navy School and at Magdalen College, Oxford. where he devoted himself predominently to the study of Mathematics. In 1869 he was one of those selected by the Secretary of State for India to undergo a course of training in scientific forestry at the Forest School at Nancy where, with some interruption due to the Franco-German war, he remained till November, 1871. Before sailing for India, he made the acquaintance of Sir Joseph Hooker with the result that he remained in close association with the Kew Garden up to the time of his death.

After his arrival in India, he was first posted to Burma, which he had to leave reluctantly as early as 1872, owing to his being posted to Bengal. For some time he was Conservator in Madras, but in 1890 he assumed his new duties as Director of the Imperial Forest School at Dehra Dun and Conservator of the School Circle. He retired in 1899. Whilst in Bengal' he prepared a list of trees, shrubs and climbers of the Darjeeling District, a second edition of which was published in 1895. One of his great achievements was his Manual of Indian Timbers, the third edition of which appeared three years ago.

Dr. Gamble was not only a highly efficient forest officer, a great organizer and excellent teacher, but also a proficient botanist. After Sir George King had completed the first thirteen parts of his "Materials for a Flora of the Malayan Peninsula," Dr. Gamble was associated with Sir George in the writing out of parts 14 to 21, and after the death of Sir George King, Dr. Gamble completed the work up to the end of the Dicotyledons. During 1915 to 1924 he brought out six parts of the "Flora of the Presidency of Madras," containing all the families from Ranunculaceae to Plantaginaceae.

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His death prevented his completing the Urticaceae. Of special value to Indian botanists is his Memoir on "The Bambuseae of British India," which forms volume VII of the Annals of the Royal Botanic Garden, Calcutta, published in 1896, with 133 pages of text consisting of detailed and accurate description of the Indian members of this difficult tribe of grasses and 119 plates. The materials for a Flora of the Malayan Peninsula were published in the Journal of the Asiatic Society of Bengal, of which Dr. Gamble was a member from 1873 to 1893.

He was elected a member of the Royal Society of London in 1899 and received the Barclay Memorial Medal in 1915.

P. J. Brühl.

(*Read in the Ordinary Monthly Meeting, 7th December, 1925.*)

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Proceedings of the Medical Section Meetings, 1925.

FEBRUARY, 1925.

A meeting of the Medical Section was held on Wednesday, 11th February, 1925. Major H. W. Acton, I.M.S., was in the chair, and two other members and 16 visitors were present.

Dr. A. C. Chandler, Ph.D, Hookworm Research Worker, Calcutta School of Tropical Medicine, read a paper on "The Migration of Hookworm Larvæ in Soils." In this he dealt first with the different results obtained by previous workers, and gave an account of the technique employed to count the number of hookworm larvæ in a given weight of soil. No evidence of lateral migration of the larvæ was obtained. The larvæ, however, have a definite negative geotropism and vertical migration upward through coarse soil is very much in evidence. The descent of surface water, e.g. rain, tends to produce lateral scattering of the larvæ. On the sides of a soil wall, vertical migration is reduced to a minimum, and this fact is of importance in taking conservancy measures against hookworm infection. The principal factor in bringing hookworm larvæ to the surface is not the upward flow of surface water, as suggested by Payne, but negative geotropism.

Major H. W. Acton, I.M.S., Calcutta School of Tropical Medicine, then read a paper on "Giant Urticaria." This condition—first described as Quincke's œdema—is common in medical practice in the tropics and is frequently mistaken for abscess formation, filarial lymphangitis, and other conditions. It is due to an œdema of the deep fascia as the result of absorption of poisonous pressor bases from the intestine. The patient is sensitive to certain foodstuffs, and this sensitiveness can be tested for by a dermal inoculation test. The condition may affect one limb, or even the pharynx and glottis. In individuals subject to the complaint, the condition usually follows a number of hours after the consumption of certain foodstuffs, and there is evidence of an inherited deficiency of the defence mechanism against such pressor bases. It appears to be commoner in Europeans than in Indians, and is not infrequently mistaken for filarial lymphangitis, whilst cases are known where a surgeon has operated on the limb under the mistaken impression that pus was present. The age incidence is peculiar; young children of from 15 months to 2½ years of age

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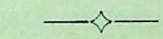
are susceptible, especially at a time when new foods are being added to a previously whole milk diet; also adults between the age of 30 and 45. In Europeans living in the mofussil, whose meat diet may largely consist of chicken, the condition may come on when they visit Calcutta and ingest unusual foods, such as beef or pork. The onset of the condition is usually sudden, and about six hours after eating the foodstuff concerned. The arm is commonly affected, and becomes swollen and tender; less often the scalp; sometimes the leg; occasionally the face. There is no superficial œdema or urticaria, the condition being limited to the deep fascia. Eosinophilia is common, and on pressing the skin deeply with the thumb and making a line on it the white line due to adrenalin deficiency is seen.

Cure of the condition is easy, once the causative food factor has been found; the food concerned must be eliminated from the diet. Adrenalin—given for the first three days hypodermically, and later by the mouth—is valuable in treatment; also thyroid extract to stimulate the general body metabolism. The stools should be examined for *Entamoeba histolytica*, since ulceration of the colon due to this parasite may play a part in permitting absorption of the bases concerned. If the intestinal flora is abnormal, intestinal antiseptics may be indicated. Locally hot applications should not be employed, but evaporating lotions or lotio calaminae give much relief. The chief importance of the condition is to be able to recognise it, and the factors underlying its causation. It is not a neurosis, as is so often stated in dermatological text books.



MARCH, 1925.

A meeting of the Medical Section was held on Wednesday, the 11th March, 1925. Major H. W. Acton, I.M.S., was in the chair, and 8 members and 23 visitors were present.

Dr. Uma Prasanna Basu, M B., M.R.C.P. (Lond.), read a paper entitled "Preliminary Observations on Diseases of the Heart as met with in Bengal."

Cardiac cases in Bengal, he observed, were very different from those in Europe. Chronic endocarditis, mitral disease and aortic regurgitation—so common in Europe—were rare in Bengal, whilst rheumatic disease was rare, and granular kidney also. On the other hand, acute infections of the heart appeared to be commoner, as in the acute lesions following influenza, small-pox, or typhoid fever. Angina pectoris as an expression of coronary sclerosis was rare, but angina due to exhaustion of the myocardium, and associated with acute fevers, was common, and paroxysmal tachycardia was frequently seen. In brief, in India

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the stress of the commoner diseases appeared to fall on the myocardium, rather than on the endocardium as in Europe. The combination of a toneless myocardium, a muffled first cardiac sound, and effort syndrome was common. The factors concerned were—(1) possibly climatic, vaso-dilation being common from the damp heat and the population in general being lethargic ; (2) an inferior dietary, largely due to poverty and caste custom, and (3) finally, the frequency of such diseases as cholera, malaria and kala-azar, which weakened the myocardium.

In the discussion on Dr. Basu's paper, Major Acton drew attention to the different pathological processes seen in the heart in the tropics, when compared with those seen in Europe. Dr. Basu mentioned the difficulty of detecting cyanosis in dark skinned races ; focal infections, especially those peculiar to the tropics were of importance, whilst in general the blood pressure was lower in Bengalis than in Europeans. Dr. U. P. Basu, in replying, said that the main factors causing the differences between conditions in Bengal and Europe were climatic and the incidence of tropical fevers, with resultant anæmia and loss of tone of the myocardium.

Major R. N. Chopra, M.A., M.D., I.M.S., Professor of Pharmacology, Calcutta School of Tropical Medicine, then read the first section of a joint paper by himself and Major H. W. Acton, I.M.S., on "Indian Diets in Health and Disease."

The European medical practitioner in India, he said, had hardly realised the importance of Indian dietaries with reference to health and disease. An Indian patient always laid great stress on the dietary which he should follow. Indian diets were largely based on economic principles, long experience of climate, and on social customs. Two chief meals a day were taken, one in the morning, one between 7 and 8 p.m.

With regard to carbohydrates, about one-third of the population of India are rice eaters, the others living on wheat and various cheap millets. Wheat has never been a staple food with the poorer classes in India, since they cannot afford it. Sugar obtained from the sugarcane and unrefined sugar (*ghur*) enters largely into the composition of sweets and drinks. The proteins of the diet were derived, in the case of the meat-eating castes chiefly from the flesh of sheep and goats, but Hindus partake largely of fish, and when available of wild game. Among non-meat-eaters, pulses largely took the place of flesh food and provided proteins. For fats, the better classes relied largely on butter and *ghi*, the lower classes on mustard oil, coconut oil, and sesame oil. Spices, used for flavouring and for digestive purposes, were chiefly coriander, turmeric, black and red pepper, ginger, asafœtida, cloves, and cinnamon.

In the discussion on Major Chopra's paper, Dr. G. N. Mukerji pointed out that Susruta had advocated different diets

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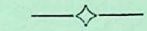
for different employments, also a different order of the meal from that customary in Europe. Thus the dishes partaken of in turn were sweets to begin with, then vegetables, rice, and finally bitters. Certain incompatibilities were recognised; thus eggs should not be taken with milk, nor fish with milk. Considering how monotonous was their diet, the health of Hindu widows was remarkably good. Dr. S. S. Mitra drew attention to the different methods of cooking rice in India and Japan. Major Chopra replied, and the meeting terminated at 8 p.m.



APRIL, 1925.

A meeting of the Medical Section was held on Wednesday, the 15th April, 1925. Major H. W. Acton, I.M.S., was in the chair, and three other members and 11 visitors were present.

Major Acton read the second part of a paper by himself, and Major Chopra, I.M.S., on "Indian Diets in Relationship to Health and Disease."

Indian views on dietaries, he said, were entirely different to those of European races. Thus the view that meat was unsuitable to the Indian dietary was borne out by the fact that in most Indians the gastric juice was deficient in acid and pepsin. Susruta had divided the different articles of diet into three groups: (1) those which were absolutely beneficial; (2) those which were unconditionally harmful, and (3) those which might be included amongst foodstuffs, with certain reservations. The first comprised water, *ghi*, milk, honey, boiled rice and the juice of the pomegranate. Various vegetables, such as spinach were also included, and also the flesh of the deer and wild game, also pulses. There were certain incompatibles, however; thus meat should not be taken with boiled rice prepared from germinating paddy, nor milk with fruit or flesh.

In many ways the doctrines of Susruta had a sound physiological, albeit empirical basis. The dietaries of Susruta depended on the *tridosha* theory. In this the three fundamental or primary virtues were held to be *saiva*, which regulated katabolic changes on a physical plane; *raja*, which dealt with affections in the moral plane; and *tama*, which dealt with matters in the psychical plane. In the physical plane, three forces were recognised, *vaya*, *pittam*, and *kafa*—the three *doshas*. *Vaya* really corresponded to the sum of the regulative forces; *pittam* was used of both bile and metabolism and internal combustion; *kafa* was the chyle which filled all the interstices of the tissues, and was essentially cooling in function. The loss of *vaya* was followed by diseases characterised by languor and unconsciousness; that of *pittam* by impairment of the body heat; digestive disturbances and jaundice; that of *kafa* by

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dryness, burning fever, thirst, insomnia, and febrile disorders. Accordingly, diets in disease should be so directed as to correct these errors. In disturbance of the *vaya*, fish, nuts, the flesh of the pigeon were recommended, or, if in excess, sedatives such as *Cannabis indica*, but to be used sparingly. Foods acting on the *pittam* or digestion were such articles as radishes and cucumbers and the various dâls; to combat indigestion, such articles as ginger, cloves, cardamoms and asafœtida were indicated. Finally, those foodstuffs which increased *kafa* were the innocuous foods, such as milk, *ghi*, water and honey. Unfortunately, the misinterpretation placed by subsequent interpreters on Susruta's definition of *kafa* had led to its being interpreted as phlegm, with the result that certain articles of diet—such as milk—were tabooed in bronchitis and phthisis. Great attention was paid in Indian dietaries to what were supposed to be aphrodisiac foods, such as the milk of the camel, the flesh of the pigeon and sparrow, honey, *ghur*, various wines, and the pistachio nut. Articles to be partaken of in febrile disorders, due to loss of *kafa*, were drinks of the lime, lemon, tamarind, orange juice, sherbet, pomegranate juice, and such products of milk as whey and diluted curd. In catarrhal states, all acid and sour articles should be excluded from the diet.

Turning to various Indian invalid diets, rice was taken as gruel, or fried rice dissolved in water. Barley was taken as gruel, mixed with sugarcandy and lime juice added. Pulses were chiefly taken in soups. Turning to dietaries in disease, in fevers the main line of treatment was first fasting, followed by sherbets and fruit juices, gruels, fish soup; and then old rice; in Northern India, gram soup and *suji chuppaties* were given. In nervous disorders fish was a favourite article of diet, also almonds, and pumpkin and cucumber seeds. In diarrhœa and dysentery, the patient was first made to fast, if not too weak, and was then given gruels of barley or fried rice, flavoured in various ways; *ysufgul* was also a favourite remedy. Milk, being considered a laxative, was prohibited, but goat's milk could be taken, also soups made from the flesh of young animals. For indigestion, milk, especially unboiled goat's milk, curdled milk, *kidjeri* and wheaten *chuppaties* were given; *ghi*, meat, the coarser pulses and honey being prohibited. In any disease associated with cough, milk, *ghi*, rice and all sour or acid substances are prohibited, and meat—especially goat's flesh, eggs, dâls, *chuppaties*, and other articles which were thought to be drying were given. Cholera was attributed to eating raw fruits and drinking water at the same time; all food is stopped, and a decoction of aniseed, cinnamon and cardamoms given—rather recalling Tomb's essential oils' mixture for cholera. If collapse supervened raisin or date infusion is given. In leprosy—

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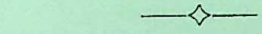
with which all varieties of leucoderma are confused—fish, oils for cooking, new rice, meats, onions, garlic, chillies, curds and all sour articles and sweets are prohibited; the diet should consist of old rice, pulses given as dâls, bitter curries, green plantain shoots, young *neem* leaves, whilst everything, should be cooked in *ghi*, and as much *ghi* as possible partaken of.

In conclusion, the author said, he hoped that he had given an impartial and unbiassed exposition of the subject. There was much of importance to study in Indian dietaries, based as they were on long centuries of experience in a tropical climate.

In the discussion on Major Acton's paper, Major R. Knowles mentioned Hegner's work, in which that author had shown that a change from a vegetarian to a carnivorous diet in infected rats, might clear the intestinal tract of infection with flagellate protozoa. In the Khasi Hills, honey was used for embalming dead chiefs, though he did not know whether the honey so used was subsequently sold, as alleged. Dr. U. P. Basu said that certain possible articles of diet had been curiously neglected by Bengalis. On the other hand, *moori* and *koi* rice were valued for their sleep-inducing properties in the aged. Milk in general was a substitute for meat, but under present-day conditions was rather a source of disease than of health. The motto of "every Hindu his own cow," would not be a bad one. Major Acton replied, and the meeting terminated at 7-35 p.m.



AUGUST, 1925.

A meeting of the Medical Section was held on Wednesday, the 12th August, 1925, Lieut.-Col. J. W. D. Megaw, I.M.S., being in the chair.

Rai U. N. Brahmachari Bahadur, M.D., M.A., Ph.D., F.A.S.B., read a paper entitled "Some Observations on the mechanism of Hæmoglobinuria in Man." He claimed that in this condition the peripheral blood shows very little evidence of hæmolysis, and that most of the hæmolysis occurs in the liver.

Dr. A. C. Chandler, Ph.D., then read a paper on "The Epidemiology of Hookworm and other helminthic Infections in the Assam Tea Estates." (A paper subsequently published in the *Indian Journal of Medical Research*.) The author had made a special study of the problem on the Moheema Tea Estate, and had found that 93.6 per cent. of the coolies were infected. In children, infection was almost universal, and even children of one or two years of age were infected, but in them the intensity of infection was not as great as in adults. Soil

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pollution was universal as no latrines were provided, and, as a rule, certain sites were selected by households for purposes of Nature. The activity of soil beetles in mixing the fæces with the soil especially favoured the dissemination and development of the larvæ. Soil pollution also occurred in the tea cultivation, but not to the same extent as at the selected sites. Cattle sheds did not appear to be important sites of infection, though cattle swallow hookworm eggs and the eggs pass through their intestines unchanged.

Climatic conditions are such that the period during which infection is acquired is practically limited to the seven months from the middle of March to the middle of October. A layer of thatch a few inches thick effectively prevents contact with hookworm larvæ in the soil, even under the most favourable climatic conditions, whilst in dry weather it would probably result in the complete destruction of eggs and larvæ. Vertical migration of hookworm larvæ on a soil wall being practically *nil*, the use of narrow, deep, trench latrines was advocated. The high degree of infection with *Ascaris* and *Trichuris* among the coolie population was traced to the drinking of *hula* water. These *hulas* became heavily charged with ova from excreta passed on to their banks and washed down into the *hula* water by rain. In general, helminthic infection in the Assam tea gardens was a difficult problem, but one which must be faced.

. . . . . .

The policy of admitting medical visitors to meetings of the Medical Section was continued during the year, but one feels that many such visitors should become members. Also that there is need for a closer collaboration between the medical and natural history sections, for research work in medicine often calls for assistance from such sciences as biology, zoology, and botany. Further, the advantages which the Medical Section affords to members are at present not sufficiently realised, especially the facilities afforded by the library of the Society; whilst claims to priority in discovery can be established by reading a paper before the Medical Section.

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On the Manuscript Drawings of Fish in the Library of the Asiatic Society of Bengal.

I. Fish Drawings in the Mackenzie Collection.

By Sunder Lal Hora, D.Sc., *Officiating Superintendent, Zoological Survey of India.*

(Published with the permission of the Director, Zoological Survey of India.)

My object in writing these notes is to bring to the notice of ichthyologists in this country and abroad the wealth of material, in the form of manuscript drawings of fish, that exists in the library of the Asiatic Society of Bengal. The presence in the Society's library of a copy of Hamilton Buchanan's manuscript drawings is well known to all workers on the subject and the recent contribution of Dr. E. W. Gudger [1] in the pages of this *Journal* has shown how much work still remains to be done to pay an adequate tribute to the glorious work of this great naturalist. Owing to the introduction of steel shelving a good deal of rearrangement has had to be carried out in the library and through the efforts of Mr. van Manen, the energetic General Secretary of the Society, several interesting works have been rediscovered. Mr. van Manen drew my attention to several folio-volumes of zoological drawings and a cursory perusal of the fish drawings at the time interested me very much. I am greatly indebted to the General Secretary for kindly drawing my attention to these valuable manuscripts and for helping me later on in collecting information regarding them.

Very little has hitherto been known regarding Mackenzie's interest in the study of natural history objects and I have not found any mention of his fish drawings in literature. Dr. B. L. Chaudhuri [2] in his presidential address to the section of zoology and ethnography of the 5th Science Congress gave an excellent review of the history of Indian ichthology, but even such an exhaustive piece of work contains no mention of the fish drawings under report.

Lt.-Col. Colin Mackenzie made a valuable collection of oriental manuscripts and articles illustrative of the literature, history, statistics and antiquities of southern India at the time

1 Gudger, *Journ. As. Soc. Bengal* XIX, pp. 121–136 (1924).

2 Chaudhuri, *Journ. As. Soc. Bengal* XIV, *Proc. V. Sci. Congress*, pp. cxxxviii–cl (1918).

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when the two pioneer Indian ichthyologists, Patrick Russell and Francis Buchanan (afterwards Hamilton), were busy collecting material for the *Fishes of Vizagapatam* and for *An Account of the Fishes found in the River Ganges and its Branches* respectively. The Oriental manuscripts have been catalogued[1] by various institutions in which they are preserved at present, but nobody seems to have taken any interest in the natural history drawings in this collection. I sincerely hope that this note may excite enough interest to cause these valuable collections to be studied critically.

In his descriptive catalogue of the Mackenzie Collection, H. H. Wilson gives a list of drawings and "portfolios" (p. 581). In the list of drawings are mentioned 65 originals and 58 duplicates of natural history objects, while among the portfolios are mentioned 65 original drawings of natural history objects. The drawings now form a part of the Mackenzie Collection in the India Office Library[2] while the "portfolios" appear to have been bound in a volume at some unknown date and are now in the library of the Asiatic Society of Bengal. In the volume of manuscript drawings that I have examined there are 55 coloured plates and two plates of pencil sketches, 4 bird plates (Nos. 4-8) are missing and four other plates appear to have been torn from the bound volume. Thus the original number of loose sheets with the drawings must have been 65 which agrees with the number of "portfolios" given by Wilson.

In binding these "portfolios," the binder has cut the description in places and in one instance a portion of a fish drawing has been cut away. There seems to be no doubt that the drawings in the possession of the Society are really the natural history portfolio drawings referred to in Wilson's Catalogue.

---

[1] Wilson, *The Mackenzie Collection. A descriptive Catalogue of the Oriental Manuscripts* (Calcutta: 1828, 2nd Edition).

Taylor, *Examination and Analysis of the Mackenzie Manuscripts deposited in the Madras College Library* (Calcutta: 1838).

Blagden, *European Manuscripts in the India Office Library*, vol. I. *Mackenzie Collections*, Part I. *The 1822 Collection and the Private Collection* (London: 1916).

[2] On an enquiry from the India Office library I have learnt that "this library possesses a volume of Natural History drawings, belonging to the Mackenzie Collection and corresponding to, and designated as, No. 4 on p. ccxxiii of the catalogue of the collection by H. H. Wilson, (=p. 581 of Ed. 2, Madras, 1882).

In the same collection there is, further, a volume entitled, on the cover, 'Natural History and Botanical Drawings' and containing about 74 drawings ot quadrupeds, birds, fishes, reptiles, snakes and flowers.

Contents of Vol. 4, as stated within.

Seven drawings of fishes.
Thirty-six drawings of birds.
Seventeen drawings of quadrupeds.
Five drawings of snakes and lizards.
Two drawings of a lizard and of a pangolin."

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At present this volume contains 90 drawings, on 55 coloured plates, which are distributed as follows :—

Insects	..	..	2
Spider	..	..	1
Fishes	..	..	26
Reptiles	..	..	8
Birds	..	..	50
Mammals	..	..	3

The numbering of the drawings is given according to the subject, but on some drawings the numbers are given without any reference to the previous number and this indicates that these must have been originally on separate loose sheets.

I have spent some time on the identification of the fish drawings. They are not very accurate, but as most of them represent common South Indian species it has been possible to determine their identity fairly easily. In the following list I give full particulars regarding these drawings, so far as can be made out from the notes on the plates, and their probable scientific names. For convenience of reference I have followed Day's *Fauna of British India* in identifying them. There are two drawings of a globe-fish from St. Thomé River near Madras (probably a creek of the Adyar River, which flows near St. Thomé at Madras). It is referable to my genus *Kanduka* recently described from the Gangetic Delta and the back-waters at Ennur.[1] It shows that this genus is fairly widely distributed in the estuarine and brackish waters of India. The *Kanduka* from St. Thomé River is either a new species, or the drawing represents an adult of *Kanduka annandalei* from Ennur. I reproduce the drawings here (Fig. 1), but refrain from describing it as a new species.

In the Centenary Review of the Asiatic Society of Bengal from 1784 to 1883 there occurs a very significant passage, (in Part 1, History of the Society, p. 23. By Rajendralal Mitra) which throws light on the date of receipt of the Mackenzie Manuscripts in the library of the Society. It reads "A very valuable collection of Manuscripts, being diverse occasional papers and essays, and 10 volumes of drawings of antiquarian and archæological subjects, belonging to Colonel Mackenzie, for a long time Surveyor-General of India, were received in December, 1822."

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[1] Hora, *Rec. Ind. Mus.*, XXVI, pp. 579–582, pl. xxxiv (1924), *ibid.*, XXVII, pp. 468-469 (1925).

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List of fish drawings in the Mackenzie Collection in the library of the Asiatic Society of Bengal.

No. of drawing in the collection.	Vernacular name.	Probable scientific name.	Locality.	Date of collection.	Length of specimen figured.	General remarks.
1 & 2	*Goody-Champa* (Can.) or Blind Fish.	*Bagarius yarrellii* (Sykes).	Hoggree River near Ballary.	24-3-1801	3 ft.	Fig. 1, side view; fig. 2, upper view.
3	Illegible ..	? *Barbus sp.* ..	Hurryhur ..	12-9-1800	? 11 inches	The vernacular name at the top of the plate and half of the tail fin have been cut away by the binder leaving traces behind.
4	*Callarnah* (Hind.)	*Aoria seenghala* (Sykes).	Hoggree River near Ballary.	26-3-1801	2 ft.	
5	*Godlay* ..	*Notopterus notopterus* (Pallas).	Toombudra River..	1800	....	
6	....	*Callichrous malabaricus* (Cuv. & Val.).	Do.	Do.	1 ft. 3 inches	
7	*Seepry* ..	*Barbus sp.* ..	Do.	Do.	2·5 inches	
8	....	*Wallago attu* (Bloch & Schn.).	Do.	Do.	6·8 inches	
9	*Seepry* ..	*Ambassis nama* (H.B.).	Do.	Do.	2 inches	
10	....	*Barbus sp.* ..	Do.	Do.	2·75 inches	
11	*Forghee* (eatable)	*Aoria aor* (H.B.) ..	Do.	Do.	9 inches	
12	*Guirlah* ..	*Aoria cavasius* (H.B.).	Do.	Do.	6·4 inches	The longest barbel is 5·3 inches.

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13	*Oorcha* ..	*Gagata itchkeea* (Sykes).	Toombudra River..	1800	....	
14	....	*Chela boopis* Day ..	Do.	Do.	....	
15	....	*Labeo dussumieri* (Cuv. & Val.)	Do.	Do.	....	
16	*Belchau* ..	*Aspidoparia sp.* ..	Do.	Do.	3·5 inches	
17	*Gungatallay* ..	*Rohtee cotio* (H.B.)	Do.	Do.	3·5 inches	
18	*Chidevay* ..	*Callichrous sp.* ..	Do.	Do.	5 inches	The longest barbel is 1 inch.
19	*Chittra-Mine* (Can.)	*Labeo nigrescens* Day.	Hoggree River near Ballary.	26-3-1801	1 ft. 6 inches	
20	....	*Mastacembelus armatus* (Lacep.)	Cubbanee River ..	11-9-1804	1 ft. 1 inch	Drawn at Nunjengode. Depth of fish 1·5 inches.
21	....	*Ophiocephalus marulius* (H.B.)	Do.	....	7·25 inches	Place and date written in pencil, illegible.
..	....	....	....	....	....	Four plates probably containing fish drawings are torn away from here.
20	Frog Fish ..	*Tetraodon nigropunctatus* (Bl. & Schn.)	Sea-coast near Ongole	January, 1794	....	Side view, lateral view and front view. "When it is swelled up and dilates it is nearly of a circular form and rises up to the surface, but sinks when the air is spent, and the fish shrinks to its common shape."
	....	*Kanduka sp.* ..	St. Thomé River or back water.	2-12-1814	....	Fish of natural size. Something in pencil at the bottom of the plate illegible.

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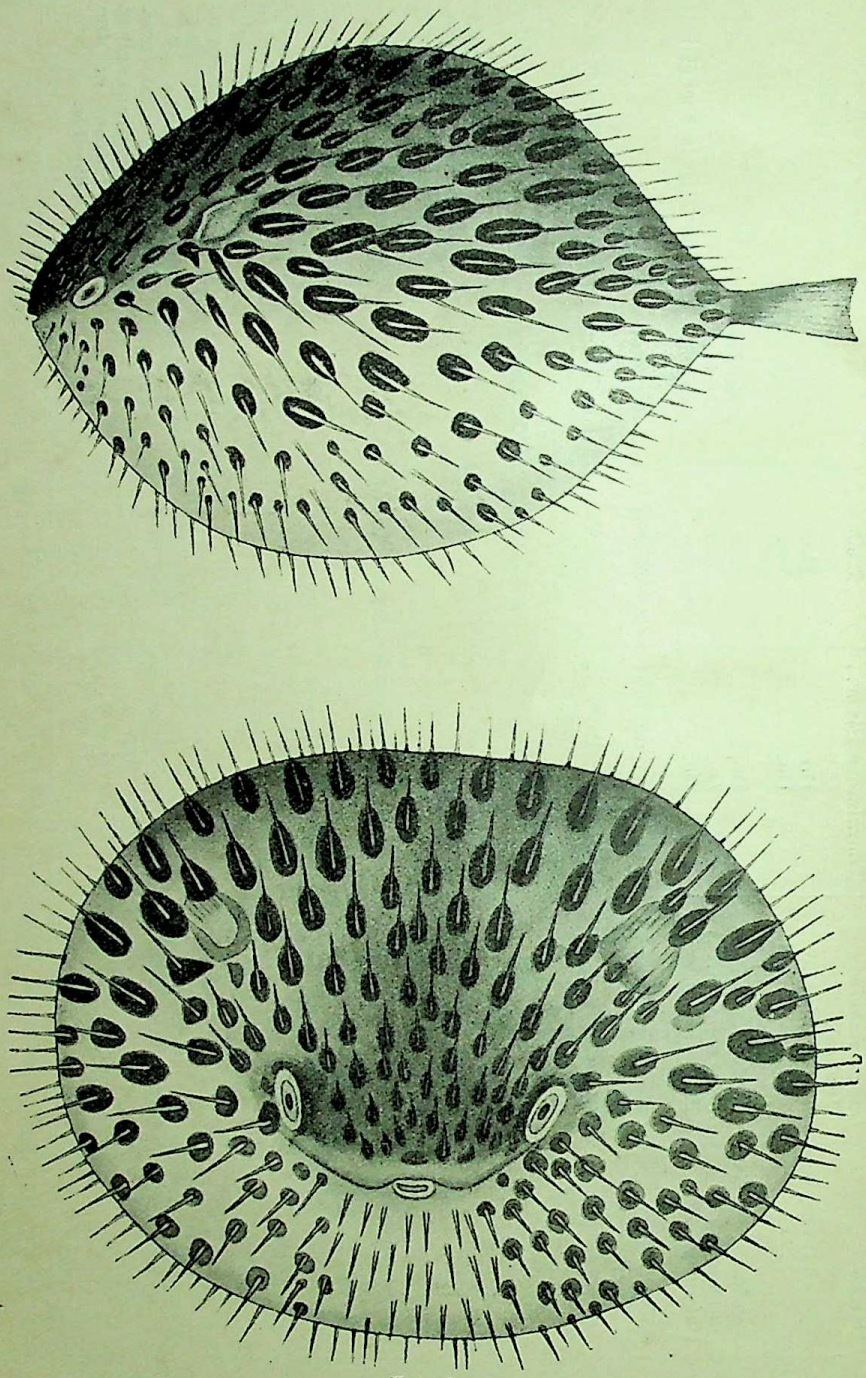

FIG. 1.
Globe Fish from St. Thomé River.

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On the Manuscript Drawings of Fish in the Library of the Asiatic Society of Bengal.

II. FISH DRAWINGS IN BUCHANAN-HAMILTON'S ZOOLOGICAL DRAWINGS.

By SUNDER LAL HORA, D.Sc., *Officiating Superintendent, Zoological Survey of India.*

(Published with the permission of the Director, Zoological Survey of India.)

There are four volumes of Buchanan's Zoological Drawings in the library of the Asiatic Society of Bengal and it is well known that two of these contain fish drawings. I propose to deal with each separately in this note.

Volume I contains 20 plates of fish drawings and it is stated on a blank leaf preceding them that all of them are copies made by Dr. Wallich and that some of them are to be recognised in the *Illustrations of Indian Zoology*. The following table gives the distribution of drawings on these plates :—

Serial number of plate in the volume.	Serial number of fish plates.	Number of coloured drawings on each plate.	Number of complete outline drawings on each plate.	Number of species represented on each plate.	Number of drawings of parts of fish on each plate.
96	1	1	1	1	
97	2	1	2	2	
98	3	1	1	1	
99	4	3	2	3	
100	5	3	0	2	
101	6	4	1	3	1
102	7	3	3	3	
103	8	2	2	2	1
104	9	3	2	3	1
105	10	4	4	4	
106	11	4	4	4	
107	12	2	2	2	
108	13	3	3	3	
109	14	2	2	2	
110	15	2	1	2	
111	16	2	2	2	1
112	17	3	1	2	
113	18	3	3	3	
114	19	5	2	4	1
115	20	3	3	3	
		54	41	51	5

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Thus there are 100 separate drawings in all, of which 54 are coloured illustrations, 41 outline drawings (dorsal view of fish) and 5 sketches representing some important structures. Of the 51 species represented on these plates *Mugil bongon* is figured in three places *viz.*, on plates 98, 99, and 114. One outline drawing on plate 97 is rather out of place and I am unable to refer it to any coloured illustration in Buchanan's collection. Day does not appear to have noticed the separate identity of this sketch when numbering these drawings. When all these drawings are separately taken into consideration the number of species represented is 51 or if the out-of-place dorsal view on plate 97 is left out the number of species is 50; but when the 3 drawings of *Mugil bongon* are taken as 1, the number of species turns out to be 48 only. This clears up the discrepancy observed in Day's note[1] on these drawings.

Of these 50 illustrations, (for the sake of convenience, I propose to leave out of account the stray outline sketch on plate 97), 45 were represented in volume IV when examined by Day (Nos. 123 and 146, of which copies exist in Volume I, are now missing from volume IV), while the remaining five were copies of originals which were not present in volume IV. Day has given the corresponding numbers in the two volumes and I give below those that he left out:—

27=no corresponding figure in vol. IV; 28=109; 30=82; 31=103; 32=126; 33=no corresponding figure in vol. IV; 34=25; 35=69; 36=no corresponding figure in vol. IV; 37=119; 38=no corresponding figure in vol. IV; 39=no corresponding figure in vol. IV; 40=41; 41=30; 42=31; 43=26; 44=42; 45=4; 46=35; 47=64; 48=83; 49=59; 50=112.

The five species not represented in volume IV are as follows:—

27. *Mystus chitala.* Reproduced in *Ill. Ind. Zool.*
33. (*Peria*) ? (specific name was removed by binder). Day remarks, "a figure $7\frac{3}{10}$ inches long of *Sillago domina*."
36. There are two remarks on the plate in pencil—(? *Catla*) and (No name).
38. (*Cyprinus mirgal*) (4. 4. 55).
39. (*C. chagunio*) (4. 4. 55).

Matter enclosed in parentheses is copied from the plates. Figures such as 4. 4. 55 occur along with some of these drawings and I am unable to understand their true significance; they may represent the dates on which copies were made or the dates when the drawings were incorporated in this collection.

It is now possible to clear up the confusion regarding

[1] Day, *Proc. As. Soc. Bengal*, pp. 195–209 (1871).

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the presence of 45 copies in the possession of the Society. As a matter of fact all these 50 illustrations of fish are copies but 5 that have not been found in volume IV have probably been regarded as originals.

Volume IV contains only fish drawings and at present it includes all those listed by Day with the exception of 123 and 146, which are missing. One drawing No. 125a, of a species of *Barbus* (*B. tor, s.l.*), is not mentioned by Day in his list but is present in the collection. Most of the species represented have two drawings each, *viz.*, a beautiful coloured drawing of the fish in lateral view and an outline sketch showing the fish from above. In the case of drawings 4, 27, 28, 32, 34, 63, 81, 85, 86, 125a and 144 there is only one illustration, in colours, for each. This statement about 144 is rather doubtful because just above the coloured drawing a considerable portion of the plate has been destroyed by white ants and it is possible that an outline sketch may have been present there; no copy of this drawing exists in Calcutta so I am unable to check this point. Drawings 8, 41, 42, 43, 65 and 94 have two coloured illustrations each and no outline drawing of fish from above. Number 80 has three complete views, of which two, lateral and ventral, are coloured illustrations; while the third is an outline sketch of the fish from above. Drawing 62 has two complete outline sketches only, while in Nos. 27, 28, 85 there is a small pencil sketch of a particular structure besides the coloured illustrations. In 35, 50, 66, 99, 105, 119 and 123, besides the two usual illustrations; there is a small drawing illustrating a particular structure. Taking into consideration the copies that I have seen of 123 and 146, the analysis yields 153 coloured illustrations of fish, 130 or 131 (see note about 144 above) outline sketches and 10 drawings of particular structures. Thus there are in all 293 or 294 separate drawings in the IVth volume.

It is now possible for me to clear up the discrepancy observed in the counting of these drawings by McClelland and Day.

Day examined and listed in the IVth volume 146 drawings of which 64, 70, and 71 refer to the same species *Mugil bongon*. Thus the total number of species examined by Day is	144
Day missed out one drawing 125a in numbering ..	1
Drawings which occur in volume I but whose originals are missing in volume IV	5
Total number of species illustrated in Buchanan's collection	150

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150 is the number given by McClelland, and Day reported 149 because he did not include 125a in his list.

I may also allude here to the number of drawings given by Cantor. It seems probable that he had only examined volume IV which contains delineations of 145 species, one of which, No. 62, possesses no coloured illustration. Thus we are left with "144 coloured figures of fishes" in this volume and this is the number given by Cantor.

After Buchanan's departure from India his Zoological drawings were placed under the charge of the Superintendent of the Royal Botanical Garden. Dr. Wallich, in acknowledging the receipts of these drawings, mentions only 144 drawings of fish. I am unable to discover how the Society came to possess originals or copies of 149 coloured drawings of different species. This point can only be cleared up by referring to the collection in the British Museum (Natural History).

It has already been stated that considerable damage has been done to these drawings by white ants. The following drawings have been damaged :—

126, a portion of the coloured illustration in the region of the ventral fins is eaten ; 128, tip of the dorsal fin in the coloured illustration is damaged ; 130, the entire outline sketch of the fish from above is missing, only a small portion of the tip of the pectoral fin of the right side is visible ; 134, the greater portion of the outline sketch is missing ; 136, the same as 134 ; 138, the outline sketch is slightly damaged in the head region and in the region of the ventrals ; 140, the outline sketch is considerably damaged, while the coloured illustration is slightly damaged in two places ; 142, the coloured illustration is represented by two bits of the caudal lobes, the outline sketch is slightly damaged ; 144, the head region of the coloured iliustration is missing and probably the whole of the outline sketch has been eaten by the termites.

In November, 1924, permission was obtained by Dr. Baini Prashad from the Council of the Asiatic Society of Bengal for copies to be made of all the fish drawings in volume IV for the library of the Zoological Survey of India. He also undertook to have the original drawings properly bound up and preserved. The book-binder, however, did great damage by removing from the manuscript, while trimming the plates, unpublished names, which had been written on them. In certain other cases these names occurring on the back of the plates are now completely covered over with the cloth used for backing the plates. Fortunately, at the request of Dr. Prashad I had copied out the unpublished names before the book was sent to the binder and I now find some differences in spelling or otherwise between the names as given by Day and as copied out by me. I may here point out that, wherever possible, I have checked my spellings from the names in pencil

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on copies in the first volume. These differences are shown in the following table. The numbers inserted on the drawings in pencil by Day have been printed and pasted in their places and also the unpublished names as deciphered by me. The volume, however, presents an absolutely different appearance from what it did before the binding.

No. of drawing.	Unpublished names as given by Day.	Unpublished names as now made out.
4	*Silurus chaka*	*Silurus ? chaka.*
6	*Silurus pabda*	*Silurus pabho.*
14	*Pimelodus muri vacha*	*Pimelodes muri bacha.*
21	*Pimelodus cavasi*	*Pimelodes cabasi.*
23	*Pimelodus viridescens*	*Pimelodes ? viridescens.*
24	*Pimelodus ? nangra*	*Pimelodes nangra.*
27	*Ophisurus rostratus*	*Ophisuris rostrata.*
35	*Squallus characias ? Kárntá*	*Squallus characias ? Kamta.*
41	*Acheiris jibha*	*Acheireis jibha.*
42	*Acheiris kukar jibha*	*Acheireis kukarjibha.*
77	*Makalkar*	*Makalpar.*
79	*Sygnathus kharke*	*Syngnathus kharke.*
80	*Sygnathus deokhuta*	*Syngnathus deokhata.*
82	*Polynemus*	*Polynemus tetradactylus.*
83	*Polynemus raye*	*Polynemus raye Lacep.? Polynemus sele.*
85	....	*Cottus grunniens.*
98	*Cyprinus pungsi*	*Cyprinus paungsi.*
106	*Cyprinus sada balitora*	*Cyprinus Sada balitora Desari.*
119	*Cyprinus kursi*	*Cyprinus kursi Nathpur.*
126	*Cyprinus goha*	*Cyprinus goha vaghra.*

I have already referred to the fact that copies of the fish drawings in the fourth volume have been made for the library of the Zoological Survey of India and quite recently permission has been extended by the Council of the Asiatic Society of Bengal to make copies of such fish drawings in the first volume as will complete our series. The copies have been made by our skilful artist Babu A. C. Chowdhury. In these copies we have retained Day's numbers and the unpublished names as found in volume IV.

Dr. E. W. Gudger[1] in his most valuable note on "The Sources of the Material for Hamilton Buchanan's Fishes of the Ganges,

[1] Gudger, E. W., *Journ As. Soc. Bengal* XIX, pp. 121-136 (1924); for all earlier references see the list of literature given in this paper.

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the Fate of his Collections, Drawings and Notes, and the Use made of his Data," has referred to the necessity for research on the literary remains of Buchanan now present in the library of the Asiatic Society of Bengal with a view to clear up "the discrepancies in the count of the volumes of manuscript and of the number of drawings, as well as of the matter of the handwritten names on the margins of the latter said to be Buchanan's by McClelland (1839), but stated for some drawings to be that of another by Günther (1872) and also by Day himself (1877)." In the foregoing account I have tried to the best of my ability to clear up the discrepancies in the count of the number of drawings and a careful search in the library of the Society has revealed the existence of 4 volumes of manuscript drawings and two volumes of zoological manuscript relating to these drawings; the existence of these two volumes has already been referred to by McClelland.

At my request the librarian of the India Office Library, London, has very kindly informed me that the 28 volumes of manuscripts lent to Dr. W. W. Hunter and examined by Day in 1873 are now lodged in the India Office Library. Besides these there are the following 10 other volumes of Buchanan-Hamilton manuscripts in that library :—

"1. Natural History Drawings from the Collection of Dr. F. Buchanan Hamilton (Folio (large) : mainly birds).
2. Hamilton on Gangetic Fishes (3 vols. folio, including one volume of Plates). This work was published at Edinburgh in 1822.
3. Buchanan-Hamilton Drawings 5 vols. (Costumes, Figures, Maps, Inscriptions, etc.) folio.
4. Burma Journal 1st and 2nd copies, 4to.
5. Dinajpur Drawings (Plans, Maps, Implements, etc.) : large folio.
6. Comparative Vocabularies of Puraniya, Runggopur, Bhagalpur, Behar and Patna : large folio.
7. Comparative Vocabulary of the Bengali and Dhanggār Languages : folio.
8. Vocabulary Bhagalpur : oblong.
9. Nepal. Some observations : folio.
10. Weather 1802 : folio."

There are three different kinds of handwriting to be recognised on the plates. Buchanan's own handwriting occurs on the back of the plates giving details as to whether the plates were done by Buchanan himself or by Mr. Gibbons. The plates that were deposited by Buchanan at the India House in 1806 are marked as such and other drawings that he got made after his return to Bengal are shown separately. In only a few cases the names of the species are given in Buchanan's own handwriting in ink on the back of the plates. In most cases a name in pencil occurs at the bottom of a drawing in Buchanan's own handwriting.

It appears that these plates were systematically arranged

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by Dr. Wallich and he has separated different groups by sheets of paper on which are written the names of the different groups. The names of fishes given on the back of the plates in volume IV appear to be also in Wallich's handwriting.

In some cases measurements of examples, etc., are given on the plates along with the vernacular names of the species. This seems to be in the handwriting of Buchanan's transcriber of notes. In the accompanying pp. 114-5 figures are reproduced specimens of these handwritings and also some of the remarks that occur on the backs of the plates.

There is one curious thing that has come under my observation when examining these manuscripts. I have found that several of the bird drawings were made by Mr. Gibbons and were either sent to the India Office direct or were left with Dr. Fleming and subsequently sent to England in 1808. It is a great pity that due credit for these drawings has not been given to Mr. Gibbons. In the zoological manuscript I have found in places Mr Gibbons' notes on his bird drawings copied out by Buchanan's transcriber. There are about 84 plates in this collection shown as the work of Mr. Gibbons; of these two have drawings of tortoises, while the rest contain bird illustrations. Of these 84 plates 46 are marked as "1st despatch of Mr. Gibbons" and the remaining 38 as having been left with Dr. Fleming and subsequently sent to the India Office in January, 1808.

Through the kindness of Mr. A. F. M. Abdul Ali, Keeper of the Records of the Government of India, I have been able to trace the circumstances under which Mr. Gibbons' drawings came to be included in Buchanan-Hamilton's collection. Besides his normal duties Buchanan was Superintendent of the Institution for Promoting the Natural History of India. When proceeding on leave in August, 1805, Buchanan made the following proposal to the Government in his letter dated the 1st of August :—

> "As no emolument is attached to the office of Superintendent, it may perhaps be difficult to procure a person qualified and willing to take charge of my office; and should a difficulty really happen, I most humbly beg to recommend Mr. Gibbons assistant teacher at the orphan school, as a gentleman who is perfectly well acquainted with everything that has been done by the institution, while under my charge, and who is well qualified to give an account of the animals of India."

Mr. W. L. Gibbons was appointed Superintendent on the 13th of August, 1805, and in his letter to the Government, dated the 21st of August, he informs the Government of having taken charge of the public property belonging to the Institution. He held charge of the office up to the 30th of April, 1807, when he was relieved by Mr. Bennet. During this period he got the drawings made and fifty of these he sent to the Government with the following letter, dated the 26th of January, 1807 :—

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"I have the honour to send for transmission to the Hon'ble the Court of Directors a box containing fifty Drawings of Birds which have been made since I took charge of the Institution for promoting the Natural History of India.

2nd. The Descriptions which accompany them are not so complete as I could wish, this is partly owing to my confined situation and to the difficulty of procuring information from the Natives of India on the subject of Natural History.

3rd. The drawings were taken from living subjects mostly procured in the neighbourhood of Calcutta.

4th. A few of the descriptions were made by Dr. Buchanan before he left India and some new names were invented by him and these are distinguished by the letter B. at the end.

5th. A few of the Birds may prove to be new species, I have not however given trivial names to them as that can best be done by the naturalists in England who have opportunities of being acquainted with all the species in each genus. I wish likewise to avoid changing names which might be necessary on account of new publications on Zoology some of which I understand are now in the Press.

6th. There are also in the same box five drawings which were made by the Directions of Dr. Buchanan but not copied before his departure. These are marked with a B in red ink."

The drawings are referred to again in Mr. Gibbons letter to the Government dated the 27th June, 1807. It reads :—

"I do myself the honour of sending the Drawings which have been made during the time that the Institution for promoting the Natural History of India was under the charge of my predecessor Dr. Francis Buchanan and myself. They are in number 230 and contained in four Port-folios. There are also two other Port-folios containing unfinished drawings, etc. The Descriptions, etc., accompanying them."

When Buchanan came back from leave he found several notes relating to these drawings among Mr. Gibbons's papers. He sent these to Dr. Fleming with the following note on the 29th of January, 1808 :—

"I send you by the bearer all the Descriptions that I have been able to collect from the papers of Mr. Gibbons relative to the Drawings made under his inspection and which were left with you, together with such additions as I have been able to make from my own observations. You will observe that the descriptions are written in my own name, but I have not failed to notice wherever I have borrowed from Mr. G.'s authority.

You will I hope have the goodness to select the Drawings belonging to these descriptions and give both in to Mr. Brown with a request that they may be transmitted to the Hon'ble Company's Library at the India House."

After the above had been written I paid a visit to the library of the Royal Botanical Garden at Sibpur (near Calcutta) in order to compare Buchanan's and Wallich's handwriting with the specimens reproduced here, and there can be no doubt as to the agreement. To my great surprise I was shown there a biography of Hamilton Buchanan entitled "A Sketch of the Life of Francis Hamilton (once Buchanan), sometime Superintendent of the Honourable Company's Botanical Garden, Calcutta," by David Prain. This memoir was printed in vol. X, part 2 of the *Annals of the Botanical Garden*,

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Calcutta. This publication is not widely known and the existence of the memoir has been unknown to many students of Buchanan-Hamilton's works. It is a painstaking piece of research, covering 75 pages of quarto size; and contains a wealth of information which clears up several controversial points regarding Buchanan's many-sided activities. In writing up this biography Prain made full use of the resources of the Library of the Royal Botanical Garden for he observes, "In the Library of the Royal Botanic Garden at Calcutta are preserved many letters, written during his Indian career by Buchanan to his friend and predecessor Roxburgh. These deal mainly with botanical subjects and therefore rarely admit of being suitably reproduced in entirety. They do, however, in many cases throw light on his Indian career, as passages extracted from them will show. In the same collection are also preserved a number of letters written by Buchanan (now Hamilton) to his friend and successor Wallich;-these are invaluable as a record of Hamilton's life after he retired."[1] I propose to give below certain passages from this work that throw light on the sources of the material which Hamilton Buchanan used for his 'Fishes of the Ganges,' and on the fate of his collections, drawings and notes regarding which most naturalists are ignorant.

"From the beginning of October 1798, till the commencement of 1800 Buchanan was stationed at Baruipur in the 24-Pergunnahs, not far from Calcutta, and while here he had occasion to make several voyages in the Western Sundribuns. Not having Roxburgh to correspond with, he appears to have given less attention than usual to botany, for he collected no specimens; any drawings or descriptions that he made were sent to his friend Smith. His zoological studies were, however, steadily pursued, more particularly his investigation of the Gangetic fishes. This subject had already engaged his attention while at Puttahaut, for in a letter from there to Roxburgh, dated 30th November, 1797, he says:—

'I have given my old painter a gold mohur a month and have him employed on fishes. I am attempting to make him do the outlines with some degree of accuracy; when he succeeds in that I shall begin to colour.'

Again, in a letter, dated 7th February, 1798, just before Roxburgh sailed, he remarks:—

'If you do not take Blocke and Forster's Termini Ichthyologici with you, I should esteem it as a great favour to have the use of them till your return.'

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[1] Prain. *A Sketch of the Life of Francis Hamilton (once Buchanan)*, pp. 1, 2 (Calcutta: 1905).

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At Baruipur, therefore, the fishes received his chief attention and it was here that he really laid the foundation of his great knowledge of the Gangetic species, embodied in one of his most finished publications."[1]

"The Marquis of Wellesley, then Governor-General, had formed a menagerie at Barrackpur, for the purpose of bringing together examples of as many species of animals as possible, as part of his comprehensive scheme for investigating the natural history of India. During the cold weather of 1803-04, Lord Wellesley attached Buchanan to his staff as Surgeon to the Governor-General, and confided the management of this menagerie to his care. Buchanan's time was therefore now mainly devoted to zoological studies and was largely spent in identifying and making drawings and descriptions of the animals in the Barrackpur collection.

None of the results of his observations during the two years thus employed, appear to have been published, but at least copies of some, if not all, of his descriptions and drawings belonging to this period are carefully preserved in the library of the Asiatic Society of Bengal."[2]

In a letter dated the 4th February, 1817, to Wallich we read,

"I am highly pleased with the engravings and descriptions of the Asclepiades which you sent. The workmanship does great credit to the natives and the whole is highly scientific. If you can go on with your Hortus Bengalensis you will ensure your reputation as a Botanist and above all will please our friend Browne. The expense in this country would be altogether intolerable nor is there at present any encouragement for works on natural history so that the first volume of Browne's Prodromus Florae Novae Hollandiae, a most scientific work, finding no sale whatever, he has stopt short.

I am just now engaged in preparing for the press an account of Nepal, Assam and the Gangetic fishes. I remain with great esteem and regard, yours very truly."[3]

"There is no record of any natural history specimens having been preserved while Buchanan was in charge of the menagerie at Barrackpur in 1803-05, but many drawings and descriptions were prepared. These were lent to Buchanan, by order of Lord Minto, when he began the survey of Bengal in 1807, and were duly returned by him to Government, on 20th February, 1815, when handing in the manuscript of his report regarding Gorakhpur, the last of the districts that he had surveyed. The manuscript and the drawings are now in the library of the

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[1] Pp. xi, xii. [2] Pp. xvii, xviii. [3] Page xxviii.

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Asiatic Society of Bengal where they appear to have been deposited in or about 1839. Their history has, since 25th February, 1815, become blended with that of the collections, drawings and descriptions relative to the great survey of Bengal."[1]

"It is equally certain that his drawings and descriptions of animals were similarly restricted to species not previously dealt with by himself at Barrackpur; to ensure this being so, he borrowed these Barrackpur drawings. The drawings and descriptions of fishes were similarly altogether supplementary to those made by himself when stationed at Puttahaut and Baruipur; these latter drawings were of course his own private property and remained in his own custody during the survey; after he reached Europe, they were utilised subsequently in illustrating his account of the Gangetic fishes. Whatever the details as regards these survey period drawings may have been, we know that after asking for and obtaining permission to take all these collections with their drawings and descriptions home to the Court of Directors, Buchanan was deprived of the drawings relating to natural history a few days before he sailed. He was not, as the letter of 31st January, 1815 shows, asked to give up anything except those drawings that dealt with animal and vegetable productions, and there is no indication that he did give up anything else. At all events his drawings of Indian scenery, some of them of a quite spirited character, are still in safe keeping at Leny."[2]

"From what actually happened to the drawings we know that they were not kept, as Day supposed, to illustrate Buchanan's reports, and it is not quite a fair interpretation of the facts of the case to say, as Beveridge suggests, that they were retained for the benefit of the Botanic Garden. Buchanan embarked, as we have seen, on February 23rd, 1815, and two days later, Wallich, who relieved Buchanan, was requested to call at the Secretariat and take away Buchanan's drawings. The following letter, dated 25th February 1815, was subsequently sent to him:—

"I am directed by the Honourable the Vice-President in Council to transmit to you the accompanying drawings of natural productions, etc., collected by Dr. Buchanan during the period he has been employed on a Statistical Survey of districts in the Lower Provinces, also drawings of the animals, birds, etc., in the menagerie at Barrackpore with the descriptions of them, and to desire that you will take charge of these drawings until further orders."

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[1] Page xlii. [2] Pages xlii, xliii.

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In the margin of this letter is the following pencil note by the Secretary to Government :—

'My dear Sir, this is the letter which I mentioned to you when you took away the drawings, that I would send you.'

The acknowledgment of their receipt by Wallich, dated 26th February, 1814, is as follows :—

'I beg leave to acknowledge the receipt of your letter of the 21st instant together with the accompanying descriptions and seven hundred and forty-five drawings of Dr. Buchanans, which the Hon'ble the Vice-President has pleased to commit to my charge, viz.,

One hundred and forty-four drawings of fishes.
Two hundred and thirty-one ditto of birds.
Twenty drawings of other animals.
Twenty-seven unfinished drawings.
One hundred and thirty-eight drawings of plants.
One hundred and forty-seven drawing of birds of the Barackpore Menagerie.
Thirty-eight drawings of other animals.

The most interesting feature of these letters is the fact that not only were the botanical drawings of which Buchanan was deprived sent to the Garden, but the zoological ones as well. Moreover, not only were the zoological drawings of the Bengal Survey sent, but those made at the menagerie at Barrackpore. The whole occurence shows that no attempt was made to utilise the drawings in the manner recommended by His Excellency, and that, although the duty of acting as their custodian was certainly imposed on the Superintendent of the Garden, there was no intention of making them permanently over to this institution.

Further orders were not long delayed. On receipt of the despatch of 15th December, 1815, an order, dated 22nd June, 1816, was sent to Hare, who had superseded Wallich as Superintendent, along with all the correspondence in the case, calling for a report from him on the subject and directing him—

'to send the drawings in question to the public department for transmission to the Honourable Court of Directors, after having had copies made of such as may be useful for botanical purposes.'

In submitting the report asked for, Hare suggested the advisability of his being permitted to copy the zoological as well as the botanical drawings before returning them to the Secretariat for transmission to England. The reply to this suggestion, which is dated July 17th, 1816, says that—

'His Lordship in Council entirely approves of your retaining copies accordingly, and requests on their completion that you will cause the originals to be carefully packed up for transmission to the Honourable Court of Directors by the first fleet of the season.'

From this point much obscurity exists as regards the fate of the drawings. The natural history collections which they illustrated went home with Buchanan in the " Marchioness

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of Ely" and the mistake in the despatch of December 15, 1815, which said that certain collections had been retained in Calcutta, was no doubt pointed out. The note of 5th January, 1815, by the Marquis of Hastings, which Buchanan had not seen and which was not therefore among the correspondence handed by Buchanan to the Court when he arrived in England, appears to have also reached the Court of Directors and to have led to enquiries on their part from the authority who had so depreciated Buchanan's work to Lord Hastings. The result was a change of the attitude of the Court towards Buchanan and his collections which, as Buchanan explains in a letter of February 1817, they treated with 'arrogance and contempt,' an attitude which they for a time unfortunately adopted towards his journals and reports as well.

The Court in 1820 so far unbent as to permit Buchanan to take away his botanical specimens and arrange them "for the Company's collection and for publication in such journals as may accept them." About the same time, as we have seen, the Court allowed Colebrooke to extract and edit certain portions of Buchanan's reports. The interesting point is that when Buchanan (now Hamilton) obtained his botanical collections, the corresponding drawings had not reached England, so that the order of the Government of Bengal, dated July 17th, 1816, was not yet fulfilled in June 1821.

Why the order was not carried out the writer cannot ascertain. There is no record that the drawings were transmitted to Government by the Superintendents of this Garden between 1816 and 1821. At the same time it is difficult to understand how orders so definite as those quoted above could have remained unfulfilled without reminders from the Government at Calcutta, or the Court of Directors or both.

The next reference to the Buchanan drawings that the writer is able to find is the indignant one by M'Clelland of 1836. From the somewhat vigorous manner in which M'Clelland writes, we gather that M'Clelland believed the drawings which Wallich, Superintendent of this Garden, had placed at his disposal in 1833 were the original zoological drawings of which Buchanan had been deprived in 1815. Nor is there anything in Day's careful notice to indicate that he had a different belief. As we see, however, from the letter of 25th February, 1815, the drawings made over to M'Clelland included not only the drawings of which Buchanan had been deprived in 1815, but the drawings that were made at the menagerie, and if the orders of July 17th, 1816, was really carried out, the drawings, at any rate of the 1807-14 survey period, could only be copies. If there be any originals, these originals should belong only to the menagerie collections 1803-05.

The much discussed collection is in the Library of the Asiatic Society at Calcutta at this moment. It consists of

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zoological drawings only, in four volumes, of which three are respectably and one, marked vol. IV, is shabbily bound. The first contains mammals for the most part, and they appear to the writer to be chiefly copies of other drawings made at Barrackpore and sent to the India House. The second and third are mainly devoted to birds, but though often endorsed by Buchanan they are not drawings of his own supervising but drawings by a Mr. Gibbons; as the endorsements show, they are, moreover, in many cases, only copies. The fourth volume is chiefly devoted to fishes, and is the one which has received most attention from M'Clelland and Day; the latter says that in two volumes there are 149 original coloured delineations of fish and 45 copies. The writer's opinion is that the majority, though not all of the 149, are replicas made under Buchanan's supervision of drawings that in due course found their way to the India House and are the same in the main as a set described by Günther in the *Zoological Record* for 1869 as preserved in the British (Natural History) Museum. The obious copies are possibly the copies that Hare was directed to make in 1816. Whether the drawings from which these copies were made, which are the ones that were ordered to be sent home, did or did not go home after 1820 perhaps might be ascertained at the India Office. As far as the botanical drawings are concerned, we know that though they did not go home in time to be of use for Buchanan in 1820-22, or if they did go home before 1820 they were not given to him then, they certainly ultimately went home, for there is no botanical drawing made by Buchanan in the Botanical Garden now, and the collection there has not even Hare's copies of any of Hamilton's original drawings of plants." [1]

"The manuscripts that are associated in the Asiatic Society's collection with the four volumes of zoological drawings are in two folio volumes, one of which is endorsed by Wallich:—

'Dr. Buchanan's Zoological MSS. deposited in the Botanic Garden in 1815.'

The descriptions and notes are mostly but not always in Buchanan's handwriting; they appear with few exceptions to be rough drafts from which finished accounts might afterwards have been prepared. A few are copies of finished descriptions in another handwriting. Some but not all are dated. Of the dated ones, some are from Barrackpore, 1804, others are of later dates up to and including Gorakhpur, 1814.

The existence now of zoological specimens connected with

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[1] Pages xlvi to xlix.

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much of Buchanan's work in India appears to be doubtful. Günther states that the types of the fishes to which his drawings refer have been lost. But Day appears to question this, and refers to a passage in a British Museum Catalogue which suggests that at least some of these types may be in the Natural History Museum. The question is one on which the writer can form no opinion."[1]

"As soon as these works were completed Hamilton arranged for publication the most sustained and notable of his zoological works, the account of the Gangetic fishes. In this treatise Hamilton has embodied the observations of nearly 20 years. His attention was first given to Indian fishes in 1796; his studies were carried on with hardly a break till the end of 1799; they were renewed while he had charge of the menagerie at Barrackpur during 1804-05, and were continued while he was engaged in the Bengal Survey of 1807-14. The numerous drawings made at Puttahaut and at Baruipur were his own property and there is reason to believe that copies of the Barrackpur drawings were also at his disposal. Those made between 1807–14 were, under circumstances already dealt with, taken from him, so that the volume of plates accompanying the text is less complete than it otherwise might have been."[2]

I have quoted freely from this excellent biography of Buchanan Hamilton because it is unlikely that it will be accessible to most people who are interested in the work of this great naturalist. The biography is divided into 8 sections as follows:—

1.	Introductory	..	i,ii.
2.	Early life and family history	..	ii-viii.
3.	Service in India, 1794-1805	..	viii-xviii.
4.	Service in India, 1806-1815	..	xviii-xxvi.
5.	Life after retirement	..	xxvi-xxxvi.
6.	Journals and collections	..	xxxvi-l.
7.	Published Works and Papers	..	l-lxviii.
8.	Conclusion	..	lxviii-lxxv.

Sir David Prain has taken every possible pains to make this work as thorough as possible and now that his labours have been made more widely known I hope due credit will be given to him for this excellent work.

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[1] Page xlix. [2] Page lix.

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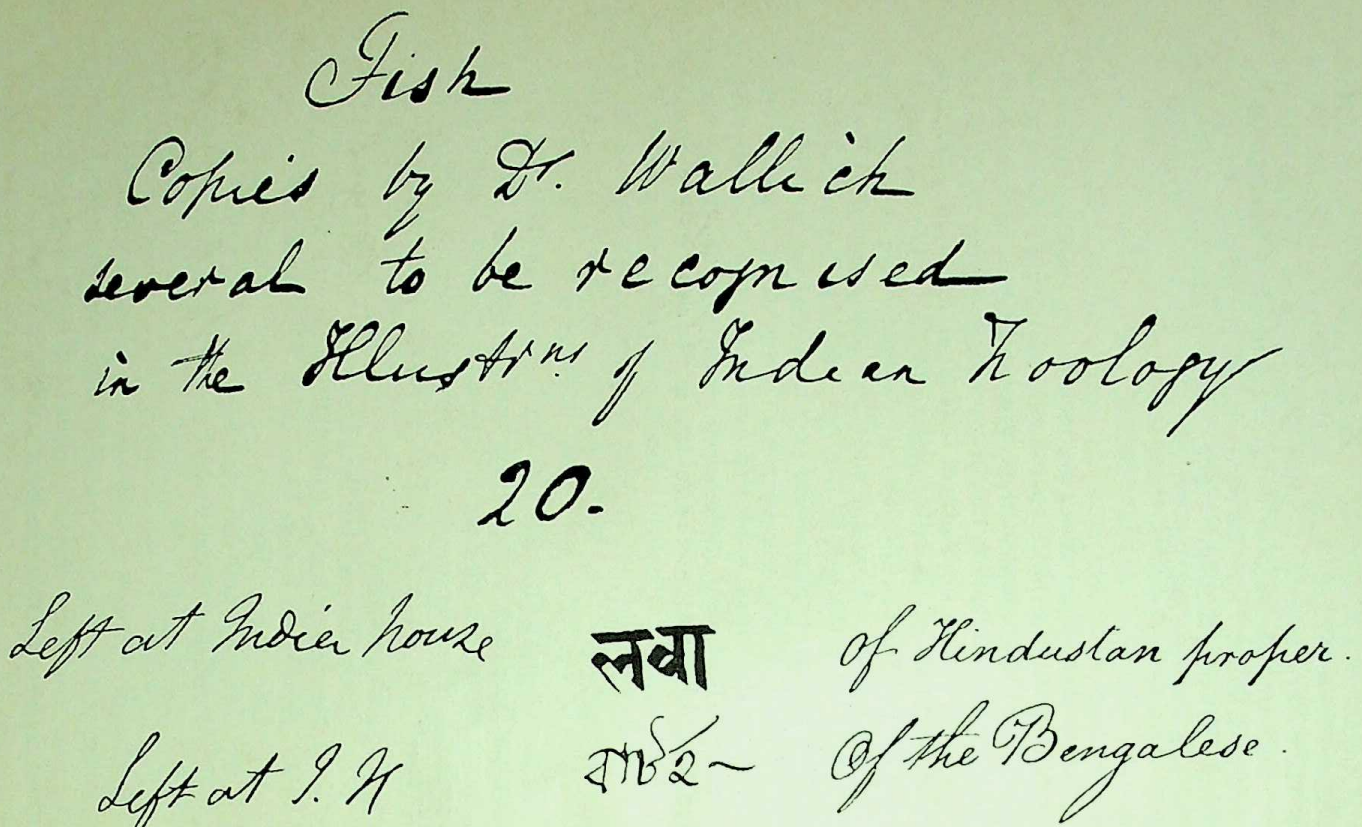

FIG. 1.—Types of hand-writing to be recognised on Buchanan Hamilton's Zoological Drawings.

Top. Wallich's hand-writing.
Bottom, right hand side. Hand-writing of Buchanan's transcriber of notes.
Bottom, left hand side. Buchanan's hand-writing.

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Among the Drawings of Mr Gibbons left
with Dr Fleming Sent Janry 1802. to I. H.

Ardea Coromandeliana

to India house
Sent by Mr Gibbons remaining drawing

Ardea Leucocephala

Fort dispatch of Mr Gibbon

Picus medius?

Drawing made since my return to
Bengal.

Among the drawings which I delivered at the

Drawings delivered at India House 1806

FIG. 2.—Specimens of Buchanan's hand-writing on backs of plates.

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On the Manuscript Drawings of Fish in the Library of the Asiatic Society of Bengal.

III. Fish Drawings among the Zoological Drawings in the collection of Lieut. Col. Sir Alexander Burnes (1805–1841) by Dr. P. B. Lord.

By Sunder Lal Hora, D.Sc., *Officiating Superintendent, Zoological Survey of India.*

(Published with the permission of the Director, Zoological Survey of India.)

Regarding the manuscript drawings under report I have found a rather unfortunate entry in the catalogue of printed books in European languages in the library of the Asiatic Society of Bengal, p. 106 (Calcutta : 1910). The entry runs as " Burne.—Zoological Drawings. (Calcutta ? 1840 ?)" On a perusal of the earlier catalogues of books in the Society's library I find that in the 1843 edition it is entered on p. 44 as " 550. Drawings of Animals collected during the Expedition to Cabul, by A. Burnes. 1837-38, 4to, 1 vol." In the 1856 edition a similar entry is given on p. 30 while in the 1884 edition no mention is made of these manuscript drawings though Alexander Burnes' three published works are included on page 46. Most of the drawings, however, possess the name of Sir. A. Burnes written in his own handwriting at the back of the plates and it has been possible for me to assign them definitely to Sir Alexander Burnes. In Burnes' book entitled " Cabool," published by John Murray in London in 1842, I have found not only a reference to these drawings but the whole history of them. Writing about the town of Sehwun on page 41 he says, " The fish here are very numerous, and a favourable opportunity was presented to us of largely increasing our drawings of them. In the end these formed a valuable portfolio of every specimen to be found in the Indus, 36 in number. The waterfowl of Lake Munchur, which Lieutenant Leech went to visit, were also figured with care. Some of them were very curious particularly the ' aree ', with three joints to its web-foot, which overlapped each other like armour. Of these, and others of the feathered tribe, the drawings at length amounted to 191, those of quadrupeds to 20, and those of reptiles to 11. The whole of these were presented by Government to the Asiatic Society of Calcutta, together with about 200 specimens of natural history, and the extensive geological collections which we made

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throughout the journey." It is extremely unfortunate that such a singular collection of drawings of natural history objects should have remained unnoticed up to the present day and especially so since zoologists are still not well acquainted with the fauna of the country traversed by Sir Alexander Burnes.

I have checked the drawings contained in the volume under review with the following interesting results :—

Reptiles. (6 plates.)

Illustrations of snakes (3 pencil sketches of scale covering and one coloured illustration of the buccal cavity have probably not been taken into consideration when counting)	5
Illustrations of tortoises (2 species only, dorsal and ventral view of both and the anterior part of the lateral view of one)	5
Illustration of a lizard	1
Total ..	11

Mammals. (12 plates.)

Drawings of complete animals (the 'Hyena of Cabool' and its prey, a lamb, are counted as two)	14
Conspicuous drawings of parts of animals ..	6
Total ..	20

Besides these twenty illustrations there is an outline sketch of a section of the horn of *Koochikoh* (a mountain sheep), but it is so small and inconspicuous that it is likely that it was overlooked when counting.

Birds. (104 plates.)

Drawings of whole animal (the drawing of a hawk with a small bird in its claws is taken to represent two separate bird drawings)	179
Drawings of parts of animals	2
Total ..	181

In the above note the number of drawings of birds presented to the Society is given as 191, while the actual number now present is 181. It appears to me likely that 191 is only a misprint of 181, because it does not seem probable that any plates have been taken from this volume.

Fish. (19 plates.)

There are 35 coloured illustrations of fish representing whole animals, 9 outline sketches showing the fish from above

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and 3 drawings of special parts. Besides these there is a drawing of a species of crab on plate 17. Probably in giving the number of fish drawings as 36 this was also taken into consideration.

There are in all 32 species of fish figured from the Indus. *Cirrhina mrigala* is represented on two plates Nos. 11 and 12 by three coloured illustrations, two of these on plate 11 are delineations of young specimens, while one on plate 12 is a drawing of an adult. There are two drawings of a species of *Oreinus* (one young and one adult) on plate 6.

In the following table I give all the information noted on these plates besides the *probable* scientific names of the various species sketched on the plates. It has been comparatively easy for me to identify these drawings as I am fairly familiar with most of the local names of fish current in the Punjab.

After I had finished the above account Mr. Johan van Manen drew my attention to the report on the Society's affairs published in January, 1847. In this report a good deal of information is given regarding the treatment accorded to these drawings by the Society. The clue thus obtained was followed up and in the following description I give a summary of the information contained in the Proceedings of the Society on this subject.

1. The drawings of the "Zoology of the Indus," made under the direction of Sir Alexander Burnes and Dr. Lord, were placed at the disposal of the Society by the Supreme Government of India in September 1838 (*J.A.S.B*, VII, pt. 2, p. 836, 1838, see also *J.A.S.B.* XVI, pt. 2, p. 853, 1847).

2. In the Proceedings of the Society held on the 5th of March, 1841 (*J.A.S.B.* IX, pt. 2, p. 1130, 1840) it is stated that a note was read by the Secretary giving "an estimate of charges for preparing coloured lithographed copies of the late Dr. Lord's zoological sketches of Cabool, and suggesting the reference of the choice of the sketches to be published to a Sub-Committee, whom the President would request to undertake that duty, in communication with the Curator of the Society." A committee consisting of Dr. Huffnagle, Dr. Spry, and Dr. Pearson was formed and "to the discretion of these gentlemen was left the sketches to be selected for publication." From the Proceedings for the same month on p. 1139 it is clear that some of the drawings were already in the hands of the lithographers.

3. "The Secretary submitted to the inspection of the Meeting several drawings of fishes of the Indus, of the late Dr. Lord's collection" (*J.A.S.B.* X, pt. 1, p. 72, 1841).

4. In the account submitted by Mr. Bolst for 1841 (*J.A.S.B.* XI, pt. 1, p. 198, 1842) we find that a sum of Rs. 1,176-0-0 had already been disbursed "for paper, and drawing and lithographing the specimens of Natural History by the

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late Sir A. Burnes, under preparation for publication in the Transactions."

5. The report of the committee appointed to conduct the publication of Sir A. Burnes' Drawings was read on the 5th of July, 1843 (*J.A.S.B.* XII, pt. 2, pp, 615, 616, 1843). Their memorandum shows that 31 drawings were completed for publication, while 29 were under examination with artists or lithographers. The Society had spent Rs. 4,494-0-0 up to that date. It is mentioned that 575 impressions of each plate (of which 550 coloured and 25 plain) were taken and the cost of each plate is estimated at Rs. 115-0-0. The total cost was estimated at Rs. 17,250-0-0. The committee considered this work of extreme importance and suggested that Mr. Blyth be asked to commence the letter press for the published plates at once.

6. In October 1844 (*J.A.S.B.* XIII, pt. 2, pp. c-cii, 1844) the committee on Sir A. Burnes' Drawings submitted a further memorandum of the state of their trust. In it they report the loss of Dr. Lord's manuscript notes concerning these drawings and the assurance given by Blyth that the letter press would be completed in a few weeks. "The Sub-committee propose, in consequence of the above assurance, to proceed with the printing of the letter press as it is prepared, in order that the plates already finished may be published at the earliest date."

7. In the Society's report for 1846 published in January, 1847, we read that the expenses incurred in the preparation of these drawings and those of Dr. Cantor's Chusan Zoology were met out of the Company's grant for Oriental Publications which was highly irregular. It is shown that up to that date 50 plates (comprising Fish 20, Mammalia 9, Birds 14, Reptiles 7) had been lithographed and coloured and that those completed had cost Rs. 5,682-1-6. of which Rs. 5,082-1-6 was paid and the balance of Rs. 600-0-0 was still due. It is also mentioned that "The financial difficulties above specified render it obviously impracticable to carry out the Society's resolution to print Colonel Everest's Trignometrical observations, as a volume of Transactions. It becomes equally impossible to proceed with the Burnes' drawings." It is further said that, "To finish the *whole*, as directed by the Society in 1841, would cost at least 12,000 rupees more, a sum altogether beyond our means, or our responsible prospects." It was, however, promised that, "The Zoological Curator, Mr. Blyth, is engaged in the MS. of the descriptive drawings completed, and the committee propose to issue the whole in a portfolio to the members of the Society, as soon as Mr. Blyth enables them to do so." It appears to have been laid down as a definite policy that no further expenditure was to be incurred on these drawings (*op. cit.*, p. 206). Mr. Hume (*op, cit.*, pp. 388–391) raised a discussion by referring to Dr. Cantor's drawings and pointed out "that the funds of the Society had been most improvidently wasted."

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Mr. Blyth, Curator in the Zoological Department, begged permission in the course of the discussion "to disavow all responsibility regarding the publication of the Burnes' drawings, which he looked upon as equally discreditable as work of art and in a scientific point of view. He had never been consulted as to their publication, although from his office in the Society his advice might have been naturally looked for."

8. A sum of Rs. 563-4-0 was paid on account of Burnes' drawings in April, 1847 (*J.A.S.B.* XVI, p. 497).

9. Mr. Blyth on the 20th of May, 1847, handed over to the Secretaries letter-press notes on 64 plates. The "Zoological Section" consisting of Capt. William Munro, J. W. Grant, Esqr., R. W. G. Frith, Esqr., and J. W. Laidlay, Esqr., after seeing Blyth's notes and the plates reported that the latter are "unworthy of publication under the auspices of the Society, being in many instances so rudely executed that it is scarcely possible to identify the animals they profess to represent, while in most others, whether regarded as works of science or of art,they fall far below that standard to which the Society's patronage should be extended." The Committee of Papers were of opinion "that the plates should not be published, but that members desiring to be supplied with a set may have them on paying the cost of binding." A full statement of disbursement on account of Sir A. Burnes' Drawings is given and it shows that a sum of Rs. 5,797-10-6 had been spent on this work in all.

It was unanimously resolved "that the plates be not published, but that copies be supplied to any member applying for them."

The report of the "Zoological Section" contained some reflections on Blyth's work in connection with these drawings and we find a reply by Blyth in the Journal for November 1847. There is one further point worth mentioning here and that is the persistent attitude of Blyth in refusing to have anything to do with these drawings. I have already referred to the promise made by Blyth to substitute a letter-press of his own in place of Dr. Lord's notes and "In consideration of this promise and to accelerate its performance, with reference also to his zealous exertions in increasing the Society's collections, the Society (as stated by Messrs. Torren, Heatly and Frith) at the general meeting of May, 1844, undertook to make an addition from that date of Rs. 100-0-0 per mensem to Mr. Blyth's salary, payable with all arrears, on the completion of the MS. Of this resolution there is no official record, but on the evidence of the gentlemen above named it was renewed and officially recorded at the general meeting of November, 1846. The meeting further resolved that the addition to Mr. Blyth's salary could not have effect beyond the 31st of December, 1864, by which time Mr. Blyth would have a claim on the Society of

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Rs. 3,200-0-0, payable on the completion of the promised letter-press."

It is much to be regretted that the above work, which agitated the Society for nearly a decade and cost it nearly six thousand rupees in 1847, was so completely forgotten in the Society.

These drawings were in a very bad condition and were not properly arranged. They have now been mounted on cloth, numbered and arranged according to the system followed in the Fauna of British India series. My thanks are due to Dr. Satya Churn Law who has arranged the bird drawings.

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List of fish drawings in the Burnes Collection in the Library of the Asiatic Society of Bengal.

Number of fish plate.	Local name.	Scientific name as entered on the plate.	Probable scientific name.	Locality.	Measurements of fish specimens.	Remarks.
1	*Jirko* ..	Probably *S. anastomus* C.V.	*Wallago attu* (Bl. and Schn.).	Caught at Hydrabad.	2 ft. 1 inch ..	3 coloured drawings and 1 outline sketch.
2	*Pulvah* (*Jelee* in pencil).	*Bagrus* allied to *B. bacha* or *B. buchanani* Val.	*Pseudeutropius murius* (H.B.).	Attock, 5th August, 1837.	1 foot ..	1 coloured and 1 outline sketch.
3	*Doongoono* ..	Probably *Schilbe garua* or allied species.	*Pseudeutropius garua* (H.B.).	Caught by hook in the Arrut at Sehwun.	13 inches ..	Do.
4	*Singàro* ..	....	*Macrones aor* (H B.).	Sehwun ..	2 feet ..	1 coloured drawing only. Stated to be "Original from Sir A. Burnes."
5	*Singalah*, or *Kagá*	*Pimelodus Rita* Buch.	*Rita rita* (H.B.) ..	Hydrabad ..	1 ft. 6 inches.	1 coloured and one sketch of a part.
6	....	....	*Oreinus*, probably *plagiostomus* (Heckel).	Fish of Cabool.	1 ft. 3 inches.	2 coloured drawings, one young 5·7" natural size and one adult, 1 ft. 3 inches.
7	*Bottle* (*Bútul* in pencil).	*Racoma labiatus* McClell.	*Schizothorax labiatus* (McClell.).	River of Cabool and Attock.	2 ft. 4 inches.	1 coloured, 1 outline sketch.

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Number of fish plate.	Local name.	Scientific name as entered on the plate.	Probable scientific name.	Locality.	Measurement of fish specimens.	Remarks.
8	*Singári* ..	....	*Schizothorax sp.*, probably *nobilis* (McClell.) ..	Attock ..	1 ft. 11 inches.	1 coloured, 1 outline sketch.
9	*Dahee* (*Kulbás* Lahore).	*Cyprinus calbasu* Buch.	*Labeo calbasu* (H.B.) ..	Caught in the Kinjor Lake and at Lahore 3rd July, 1838.	Half Natural size (9·"7).	1 coloured drawing only.
10	*Rohoo* ..	....	*Labeo dyocheilus* (McClell.) ..	Peshawar ..	2 feet ..	1 coloured, 1 outline sketch.
11	The *Moraku* ..	....	*Cirrhina mrigala* (H.B.) ..	Caught in the Delta of the Indus.	Natural size (8").	2 coloured drawings of young specimens of *C. mrigala.*
12	*Moree* (*Mirga*, Lahore).	*Cyprinus mrigala* Buch.	*Cirrhina mrigala* (H.B.) ..	Hydrabad and at Lahore, 3rd July, 1838.	2 ft. 3 inches.	1 coloured, 1 outline of adult.
13	1. *Rúhu* ..	....	*Barbus sp.*, probably *tor* (H.B.).	Husn Adal, Ajson Abdad.	1 ft. 6 inches.	One coloured drawing only.
	2. *Bátur* ..	....	*Barbus sp.* ..	Do.	13 inches ..	Do.
14	*Londah* ..	....	*Barbus sp.* ..	Peshawar ..	Natural size (10·3").	1 coloured, 1 outline.
15	1. *Goge* ..	*Mastacembelus, Rynchobdella.*	*Mastacembelus armatus* (Lacép.) ..	Killed at Sehwun.	Half of natural size (13").	One coloured drawing only.

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	2. *Chilloree* ..	*Silundia* ..	*Silundia silondia* (H.B.) ..	Killed at Sehwun.	Natural size (10·3″).	One coloured drawing only.
	3. *Panpree* ..	*Leuciscus* (Klein) ..	*Cirrhina sp.*	Do.	Natural size (7″).	Do.
16	1. *Tailee* ..	....	*Catla catla* (H.B.) ..	Caught in the delta of the Indus.	Nat. size (7″).	Do.
	2. *Poplee* (*Pootaea, Darrá*).	....	*Barbus chrysopterus* (McClell.) ..	Do.	Nat. size (3·7″).	Do.
	3. Giam ..	*Bagrus Cavasius* ..	*Aoria cavasius* (H.B.) ..	Do.	Nat. size (4·7″ body or 7·4″ with tentacles).	Do.
	4. *Moondeea* (*Daffo*) ..	....	*Ophiocephalus*, probably *punctatus* (Bloch).	Do.	Nat. size (5·7″).	Do.
17	1. ..	....	*Lepidocephalichthys guntea* (H.B.) ..	Khyrabad, Attock.	Nat. size (3·6″).	One coloured drawing only.
	2. ..	....	*Barilius vagra* (H.B.).	Do.	Nat. size (4·1″).	Do.
	3. ..	....	*Danio rerio* (H.B.) ..	Do.	Do. (1·3″).	Do.
	4. *Kâuñul* ..	....	*Barbus sp.* ..	Do.	Do. (1.5″).	Do.
	5. *Dákú* ..	....	*Ophiocephalus sp.* ..	Do.	Do. (3·8″).	Do.
	6. ..	....	*Danio sp.*, probably *devario* (H.B.) ..	Do.	Do. (2·5″).	Do.
	7. ..	....	*Barbus sp.* ..	Do.	Do. (1·6″).	Do.
	8. ..	....	*Barbus sp.* ..	Burrú, Attock.	Do. (1·2″).	Do.
	9. ..	....	*Ophiocephalus sp.* ..	Do.	Do. (3·6″).	Do.
18	*Pulla* ..	....	*Hilsa ilisha* (H.B.)..	Bukkur ..	1 foot 6 inches.	1 coloured, 1 outline sketch. The celebrated fish of the Indus.
19	*Gundun* ..	....	*Notopterus chitala* (H.B.) ..	Hydrabad ..	Half of Nat. size (10·8″)	One coloured drawing only.

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On the Dates of Publication of P.M. Heude's Memoirs on the Molluscs of China.

By B. PRASHAD, D.Sc., F.R.S.E., *Zoological Survey of India, Indian Museum, Calcutta.*

(Published by permission of the Director, Zoological Survey of India.)

The dates of publication of the various parts of Heudes' famous memoirs[1] on the Land and Freshwater Molluscs of China have been a stumbling block to systematists for a long time. The late Dr. N. Annandale in his paper[2] on the Zoological Results of the Percy Sladen Expedition to Yunnan published in a footnote the contents and dates of publication of the various parts based on my notes made from the usual works of reference. Lately when in Paris I looked up the point again, and find that the information published is in some respects incorrect. The results of my collation of the various copies of this work are as follows :—

1. Part I in deuxième cahier of tome I (Notes sur les mollusques terrestres de la vallée du fleuve Bleu.) Introduction of 2 pages, text pp. 1-84, table of genera and species, pp. 85-87 (p. 88 is blank), and 10 plates (xii-xxi)—1882.
2. Part 2 in troisième cahier of tome I, pp. 89-130 of text with an appendix on pp. 131, 132 consisting of remarks on the habits, etc., of *Rathouisia leonina* by C. Rathouis and plates xxii-xxxii—1885.
3. Part 3 in the quatrième cahier of tome 1, consisting of text marked pp. 125-180 (p. 180 is blank) and table of species, etc., on pp. 181-188, with plates xxxiii-xlii (1890).

From the above it will be seen that the page nos. 125-132 were inadvertantly used twice in parts 2 and 3.

In the Obituary Notice of Heude published by H. Fischer in *Journal de Conchyliologie* VI (Sec. 5), p. 375 (1904), there is a reference to the years of publication of the whole work partly based on C. T. Simpson's Monograph of the Unionidae in *Proc. U.S. Nat. Mus.* XXII, pp. 501–1044 (1904), but the information is apparently inaccurate.

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[1] Heude, P.M.—*Mem. l'Hist. Nat. Emp. Chinois*, Tome, I (Chang-Hai, 1880-1890).

[2] Annandale, N.—*Journ. As. Soc. Bengal*, (n.s.) XIX (1923), p. 386, footnote 3 (1924).

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On the Dates of Publication of Hanley and Theobald's "Conchologia Indica."

By B. PRASHAD, D.Sc., F.R.S.E., *Zoological Survey of India, Indian Museum, Calcutta.*

(Published by permission of the Director, Zoological Survey of India.)

The most comprehensive illustrated work on the land and freshwater molluscs of India so far available was published over 50 years ago by Sylvanus Hanley and William Theobald under the title of "Conchologia Indica." The work, which consists of 160 coloured plates and a text of 65 pages, consisting mainly of explanations of the plates with a few notes on geographical distribution, occasional literature references and a preface and systematic list of species (pp. i–xviii), was published in 8 separate parts during the years 1870–76. No definite information has, however, been available hitherto regarding the dates of issue or the contents of the various parts, and the work has generally been cited as dating from 1876.[1] In fact, except for the "Zoological Record," in which Dr. E. von Martens published partly incorrect data, no information has been available regarding the dates of issue of the various parts of this important work of reference. Recently I was fortunate enough to purchase the copy of "Conchologia Indica" which belonged to the late Dr. W. T. Blanford, F.R.S. This volume, as the inscription on the cover shows, was a presentation copy from the authors, and apparently the various parts were received by Dr. Blanford as they were issued. The title pages of the various parts, which are preserved and bound at the end of the volume except in the case of the first and the last parts, bear no dates of publication, but Dr. Blanford noted on the covers the year of issue and the number of plates received with each part. Unfortunately no record of the pages of the text issued with each part was kept by Dr. Blanford, but I have been able to get information on this point from a copy of the work belonging to Monsieur P. Dautzenberg, the famous French conchologist. In this copy the pages of the text, instead of being bound at the beginning of the volume as in other copies, are placed in between the plates, and the

[1] G. K. Gude in his volume on the Land Molluscs of India in the Fauna of British India has given inaccurate references to the dates of publication of the various parts, but he does not mention the source of his information.

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arrangement apparently corresponds to the issue of the different parts. It may also be noted that the arrangement of the plates in Monsieur Dautzenberg's copy is certainly defective and that, except for the first and the last part, the covers of the other parts have not been preserved. It is also of interest to note that in over a dozen other copies of this work, which I have seen in various zoological libraries of India and Europe, the covers of the various parts have not been preserved, and the work only bears the date 1876.

The dates of issue and contents of the various parts, according to the "Zoological Record," are as follows:—

Parts 1–3, pp. 1–28, pls. 1–60 (1870).
Parts 4, 5, pp. 28–39, pls. 61–100 (1874).
Parts 6, 7, pp. 41–56, pls. 101–140 (1875).
Part 8, pp. 57–65, pls. 141–160 (No date).

The results of my collation of the information available are as follows:—

Part 1, text pp. 1–10, pls. 1–20 (1870).
Part 2, ,, ,, 11–18, ,, 21–40 (1870).
Part 3, ,, ,, 19–28, ,, 41–60 (1872).
Part 4, ,, ,, 29–34, ,, 61–80 (1873).
Part 5, ,, ,, 35–40, ,, 81–100 (1874).
Part 6, ,, ,, 41–48, ,, 101–120 (1874).
Part 7, ,, ,, 49–56, ,, 121–140 (1875).
Part 8, ,, ,, 57–65, ,, 141–160 (1876)

and Preface and the Systematic List of the Species pp. i–xviii.

It is perhaps not out of place to note here that W. Theobald supplemented the text of "Conchologia Indica" by publishing in 1876 his Catalogue of Land and Fresh-water Shells of British India, and the work was later continued as Godwin Austen's Land and Fresh-water Molluscs of India. Of this latter work, which was started in 1882, two complete volumes and the first part of the third volume, consisting of both text and plates, were published up to 1920.

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An Albino Magur, *Clarias batrachus* (Linn.).

By Sunder Lal Hora, D.Sc., F.L.S., F.Z.S., *Officiating Superintendent, Zoological Survey of India.*

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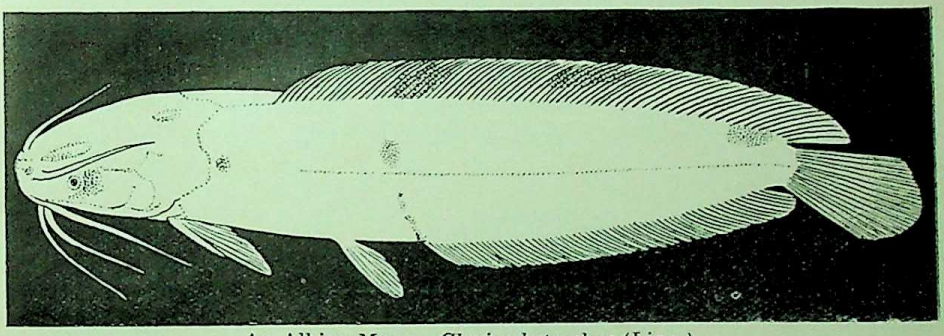
Dr. Satya Churn Law has very kindly presented to the Zoological Survey of India an albino specimen of the common Bengal *Magur*, *Clarias batrachus* (Linn.) preserved in spirit. The specimen was collected, along with another albino specimen and a number of examples showing normal colouration, in a pond at Midnapur. I am greatly indebted to Dr. Law for giving me an opportunity of examining the specimen and making a few observations on it.

The abnormal fish is white with the exception of two small patches of lead colour on the dorsal fin and a few dots and



An Albino Magur, *Clarias batrachus* (Linn.).

patches of lighter colour on the body and its appendages. The upper surface of the pectoral fin of the right side is infuscated with gray in its proximal two-thirds. A small black spot is present on the upper surface of the snout and a spot is also present on the left nasal barbel. On the left side the tollowing colour markings are present:—a small patch of gray colour behind the eye; a small rounded patch behind the gill cover; an oval patch dorsal to the lateral line and in position slightly behind the ventral fin; an oblique patch extending from below the lateral line to the commencement of the anal fin and a patch below the dorsal fin near its termination. On the right side

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there is only one patch of lighter colour immediately below the commencement of the dorsal fin.

Dr. B. L. Chaudhury has very kindly informed me of an interesting case that came under his notice of partial albinism in the climbing perch of Bengal, *Anabas testudineus* (Bloch.) The fish had a white patch $1\frac{1}{2}'' \times 1''$ on the right side over the abdominal region. The extent of the white patch was observed to vary with the season of the year.

Several instances of albinism have been recorded in fishes,[1] but in individual instances such as those recorded above it is not possible to say definitely whether such a condition is the result of a congenital variation (mutation) or is due purely to pathological conditions.

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[1] For works dealing with this subject see Dean's *Bibliography of Fishes* III, p. 393 (New York: 1923); also Archey, *N. Zealand Journ. Sci. Tech. Wellington* VI, p. 342 (1924).

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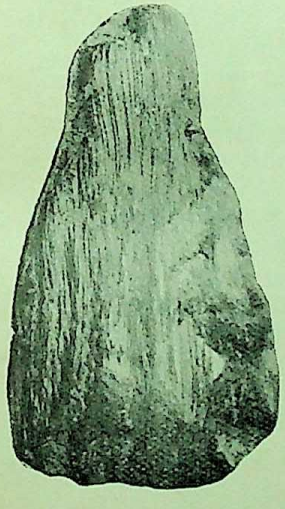
A Naga Hills Celt.

By J. H. HUTTON, C.I.E., D.Sc.

Early in 1926 Mr. G. Heseldin, of the Whitehall Petroleum Corporation, when making a road at Nichuguard at the foot of the Naga Hills, discovered a stone adze, which has one feature unusual to the celts normally found in the Naga Hills. The prevailing type of Naga Hills celt is slightly shouldered, as this is, but it is almost always made of "Indian jade," olivine, serpentine, or some very similar stone, which, if found in the district at all, is found only in the form of occasional nodules or waterworn stones.

Mr. Heseldin's specimen, the only one of its kind I have yet seen, is made of fossilized wood. As Mr. Condit, the Corporation's geologist, tells me that this silicified wood is particularly abundant a few miles north-west of Dimapur—*i.e.* in the locality in which the celt was found—it may fairly be inferred that it was made locally, which cannot safely be assumed of the similarly shaped implements found elsewhere in the district.

The measurements of the specimen are as follows:—maximum length—4⅜ inches; maximum breadth—2⅜ ins.; maximum thickness—⅝ in. The photographs show the two faces and a side view.



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Two Neolithic Stone Implements found in a Tank at Jamalpur (Monghyr).

By Upendra Nath Brahmachari, M.A., M.D., Ph.D., *and* Shyama Charan Brahmachari, B.L.

These two celts were discovered when a tank was being dug in "Nilmony villa," the residential house of our father, the late Dr. Nilmony Brahmachari in Jamalpur (Monghyr) near the hillside.

Specimen No. I. (See Pl. 4.) Found 10 feet below ground level. Unpolished, neolithic celt with sharp, round, cutting edge, both sides of the edge ground and polished up to one inch. Prominent ridge in unpolished portion on one side only. On the reverse long marks probably due to hammering.

Specimen No. II. (See Pl. 5.) Found 15 feet below ground level. Unfinished celt with cutting edge slightly curved. One side hammered into shape, the reverse partly unfinished near the top. Groove for hafting, broken at the top.

An interesting feature with regard to the second specimen is that there are small patches of *Kankar* (Calcium carbonate) deposited on its surface since the object was fashioned and which indicate considerable antiquity.

Both implements appear to be made from the same rock. The rock is a very fine grained, schistose phyllite. The specific gravity is high, 3·145 for the rough specimen and 3·06 for the smooth. About two miles from the place where these celts were discovered there are two sites on the Kharagpur Hills, popularly called the "Mossgrown Dale" and "Vulture's Nest" by the European settlement in Jamalpur. Between these sites are rocks composed of the same material as the neolithic celts mentioned above.

Our grateful thanks are due to Messrs. G. H. Tipper, R. Chandra and R. D. Banerjee for their expert and valuable opinions.

These implements have been presented to the Indian Museum.

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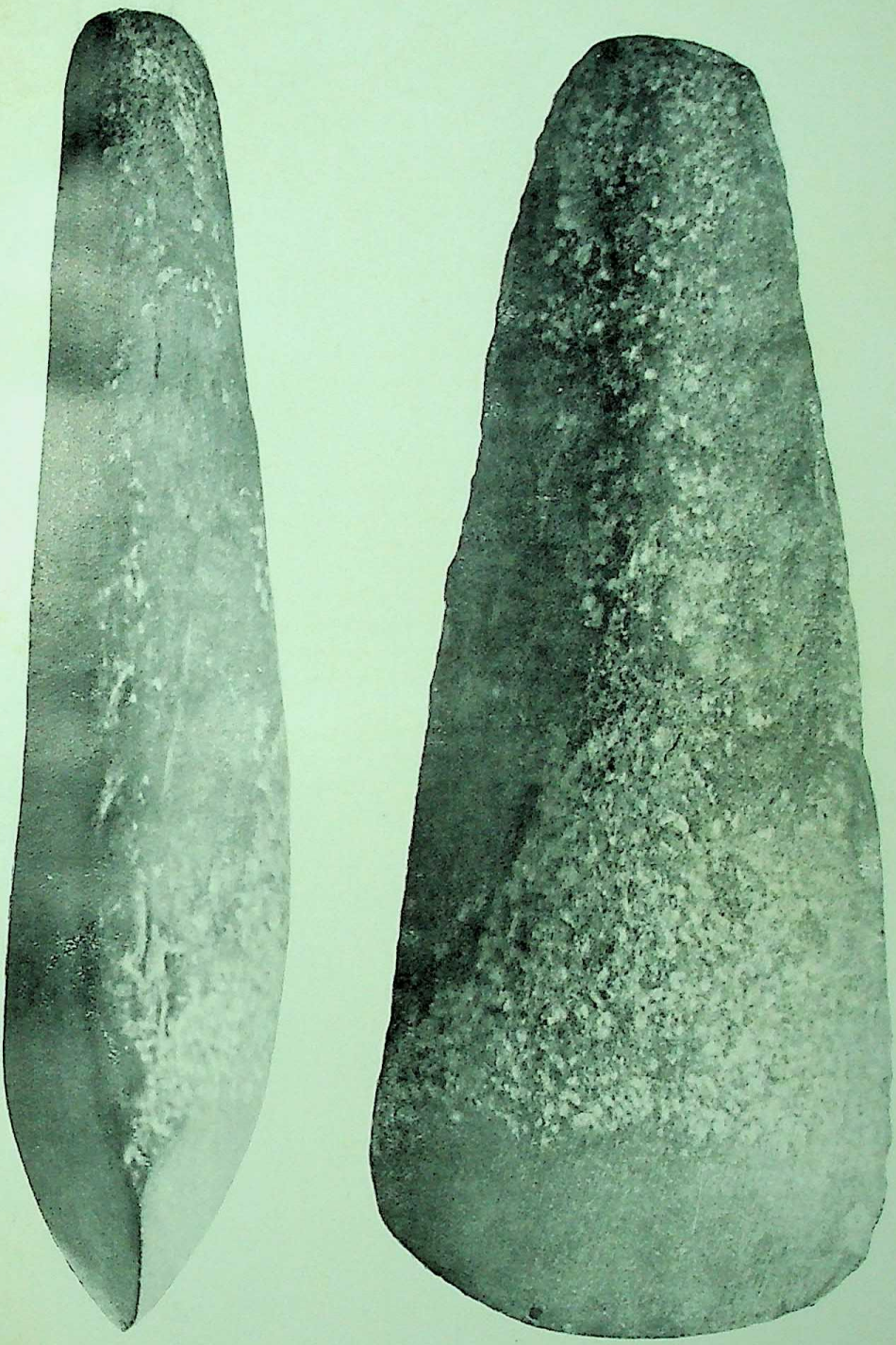

Natural size.

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⅔ natural size.

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On a Goat employed as "Scapegoat" in the Bilaspore District, Central Provinces (India).

By Sunder Lal Hora, D.Sc., F.L.S., F.Z.S., *Officiating Superintendent, Zoological Survey of India.*

(Communicated with permission of the Director, Zoological Survey of India.)

It is well known that in former times the custom of expelling the demons of sickness in the form of animals was common in various parts of India, but with the spread of education and the employment of modern methods of treatment of diseases this custom has in some parts died out altogether, while in other places it is on the verge of extinction. I am informed that some thirty years ago buffaloes were employed as "scapegoats" in my own village in the Gujranwala District, Punjab, but now-a-days such a custom is unknown to the younger generation and even the old people simply laugh at the absurdity of it. In view of the fact that many of our old customs are in the melting pot I take this opportunity to make a few observations on a kid that I found in a jungle in the Bilaspore District of the Central Provinces. The kid, a female, was found on the 12th of February, 1927, tied with a string made out of the bark of a tree to a small date-palm at cross roads along the unmetalled Pindra-Dindori-Mandla Road about six miles from the village of Goriella. The goat was bleating incessantly and this attracted my attention. At first it was thought that someone had tied it there or that its string had got entangled in the palm. But as we approached near it some local people who were travelling with us informed us that it was a *Nikasi* and that we should not touch it. We were also told that in its present condition it belonged to nobody and during the night would be eaten by some wild animal. Thereupon, Mr. R. Hodgart, Collector in the Zoological Survey of India, taking pity on the poor animal, cut the string. He also removed from round its neck and from its forehead certain articles symbolizing worship. These were carefully collected and were afterwards presented to the Indian Museum, Calcutta. The goat was brought alive to Calcutta and the stuffed specimen will shortly be exhibited in the ethnographical gallery of the Museum.

As soon as the goat was liberated the local people fled away for fear of catching the demon of sickness and those who were camping along the roadside were greatly upset and dis-owned all responsibility for the deed. As soon as we

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expressed the wish to take the goat away with us, however, they felt at ease.

An attempt was made during my stay in those parts to collect information regarding this very interesting custom, but, as Forsyth[1] has already pointed out, the poverty of the language of these people (Gonds) is a great obstacle to the inquirer. It must also be borne in mind that these primitive people are very shy in divulging their customs to officials and are usually unable to explain the whole matter in a connected narrative. The information detailed below was obtained by cross-questioning and by patiently listening to all kinds of stories, many of which had no bearing on the subject.

The religion of the Gonds in its orthodox form is purely animistic, but now-a-days most of these people have, to a very great extent, divorced themselves from the faith of their fathers and have taken to the Hindu creed. The influence of this change is well marked in their customs and was evident throughout the area we visited.

The practice is apparently somewhat of this nature. When a person falls ill the village priest (a *Baiga* or a *Gunia*) is sent for. He performs a ceremony during the course of which he continually recites a certain formula and shakes a quantity of rice in a winnowing-basket. He finishes the worship (*puja*) by making an offering of chickens, eggs, and country liquor to the goddess of the disease from which the patient may be suffering. The priest, being a privileged person, takes away all these things along with any cash that may be paid to him in consideration of his services or his office.

Malaria, cholera, and small-pox are all severe scourges in the Bilaspur District; the last named is always more or less prevalent, "but it appears to become most virulent towards the close of the cold weather."[2] When I visited this district in February small-pox was raging in a virulent form in some of the villages. It is under such circumstances that a village resorts to the ceremony of *Nikasi*, or the expulsion of an animal as a scapegoat. A female goat is purchased by public subscription and is ornamented as a goddess in the fashion to be described presently. Certain rites are gone through by the village priest and the goat is fed on rice in a winnowing basket. As long as the worship continues the goat goes on eating rice and afterwards the remaining quantity of rice is put in a piece of cloth and tied round the goat's neck. It is now supposed that the goddess of sickness has entered into the goat. The simple people now worship it and with folded hands say words

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[1] Forsyth. *The Highlands of Central India: Notes on their forests and wild tribes, natural history, and sports*, p. 139 (London: 1871).

[2] Nelson, *Central Provinces District Gazetteers. Bilaspur District* vol. A. p. 68 (1910).

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to this effect, "*Oh! mother goddess, ours is a small village and we have made enough sacrifice to please you. Now depart from here and go to a big place where you will find plenty of milk and butter to eat.*" Thus saying, they escort the goat beyond their village boundary and leave it there. It is thus supposed that the disease has been transferred from one village to another. It is now the duty of the inhabitants of the next village to escort it beyond their village boundary line and in this way the goat is driven from one village to another till it ultimately reaches the temple at Amarkantak or is taken to the nearest temple dedicated to the particular goddess supposed to be incarnated in the goat. The significance of the procedure is this. Amarkantak is the source of the Nurbadda River, one of the holiest rivers according to the Hindu beliefs, and is considered to be the residence of all Hindu gods and goddesses. By escorting the goat to this place the people seem to think that they have left the goddess in her proper abode and that she will not again come out and visit their village unless a grave sin is committed against her. The same argument applies when the goat is left at a particular temple. Ultimately the goat in its wanderings is devoured by wild animals.

The goat I found was tied to a palm at the junction of two roads. The reasons for leaving a goddess at such a place are, firstly, to bewilder her as to the direction in which she should go and, secondly, these public roads do not belong to any one particular village and so nobody cares much if the goat is left at such a place. But if anybody happens to touch the goat, the demon of sickness is supposed to enter into the person, who then becomes a vehicle for it.

As I have pointed out above, a number of articles were found on the scapegoat. In the centre of the forehead a silver four anna piece was glued on with the 'tail'-side exposed and on three sides of it, as shown in the figure, were glued six rounded spangles (*tikli*) of yellow colour, two of these in each direction. A string of yellow lac beads was tied round the horns and to the same string was tied a peacock feather in such a way as to stand upright in the middle of the head. Round the neck were tied two strings of lac beads. One contained elongated, smooth, yellow beads and in between these small, rounded, red beads. In the same string were three glass bangles of blue colour; all of them were of different sizes. The second string contained elongated and corrugated lac beads of yellow, red and green colours, and four glass bangles of somewhat smaller size than the others. Of these three were of blue colour and one of green. To one of these blue bangles was tied a bunch of cotton threads of predominantly red colour but with a mixture of white, orange, and green. A small quantity of uncooked rice tied in a piece of cloth was secured round the neck by means of a small piece of hemp twine. The peacock

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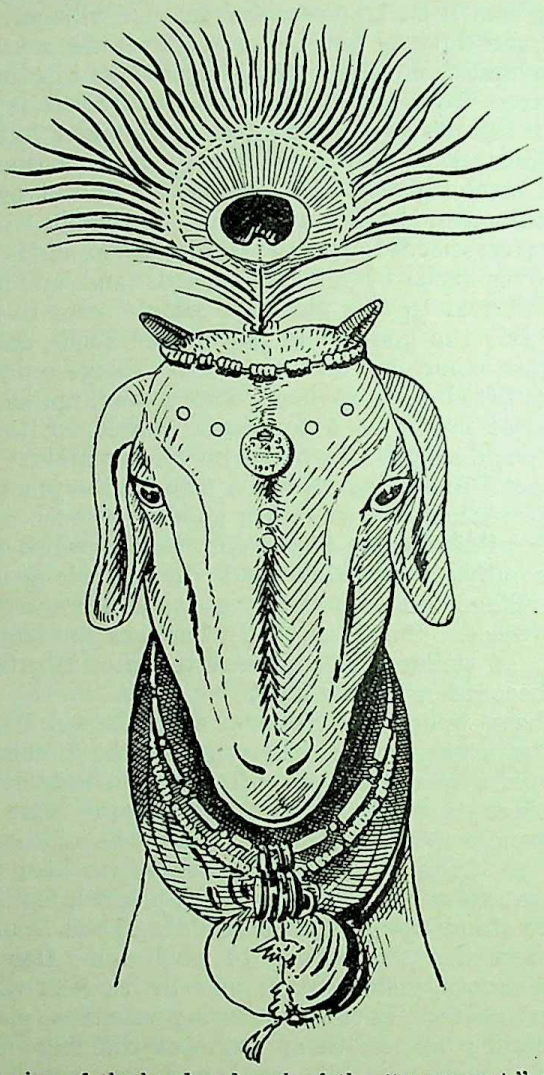
feather was further secured in its place by a string tied to it at one side and to the neck ornaments at the other.

Forsyth (*op. cit.*, p. 139) has rightly pointed out that "An intimate acquaintance with Hindu beliefs and peculiarities is



Front view of the head and neck of the "scapegoat" showing the arrangement of the ornaments *in situ*.

therefore the first essential quality of him who attempts to ascertain the distinctive features of these races; and from the want of this great mistakes have constantly been made in describing them." With my knowledge of certain Hindu customs I explain the significance of this ceremony as follows.

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At the outset it is necessary to explain that the tricking out of an animal with women's ornaments is not "a relic of some grosser form of expiation in which a human being was sacrificed"[1] or banished. According to a belief among a section of the Hindus a particular goddess is responsible for a particular disease and when an attempt is made to incarnate it in an object, a female animal is usually taken and it is ornamented with women's ornaments. All the idols of goddesses in Hindu temples are similarly decorated. There is another point worth considering in this connection. When offering a sacrifice, a male animal is selected by the Hindus; for instance, I am informed that at the Kali temple in Calcutta Bengalis offer a sacrifice of male goats and Nepalese of male buffaloes and under no circumstances is a female goat or a female buffalo sacrificed.

Red and yellow are the two sacred colours among the Hindus and that is why in the ornamentation of the goat these two colours predominate. Lac beads and bangles are used among the Hindus on ceremonial occasions as also are the feathers of a peacock. The significance of rice and the four anna bit is apparently to make a provision for the goddess on her homeward journey.

In selecting the animal for a scapegoat great consideration is paid to the colour. Usually the goat selected should be as black as possible (Frazer, *op. cit*, pp. 190–193) but Forsyth records a "white kid, wandering about with a garland round its neck" in a Gond village in the district of Betul (Forsyth, *op. cit.*, p. 171). The goat found by us was of a predominately tan colour with some white and black markings on the belly, the head and the limbs. I was, however, informed that a black or tan goat is preferably used for the ceremony.

SOME OF THE IMPORTANT REFERENCES TO THE LITERATURE.

1. Bose, P. N.—*Chhattisgar: notes on its tribes, sects and castes. Journ. As. Soc. Bengal* LIX, p. 275 (1890).
2. Crooke, W.—*Popular Religion and Folk-Lore of Northern India* I, p. 169 (1896).
3. Crooke, W.—*Tribes and Castes of North-Western Provinces and Oudh* III, p. 445.
4. Crooke, W.—In James Hasting's *Encyclopædia of Religion and Ethics* VI, pp. 312, 313 (1913).
5. Forsyth, J.—*The Highlands of Central India: notes on their forests and wild tribes, natural history and sports* (London: 1871).
6. Frazer, J. G.—*The Golden Bough.* Part IV. '*The Scapegoat*' (London: 1913).

[1] Crooke, W.—*An Introduction to the Popular Religion and Folklore of Northern India*, p. 110 (Allahabad, 1894).

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7. Nelson, A. E.—*Central Provinces District Gazetteers. Bilaspur District.* Vol. A, pp. 68, 76 (1910).
8. Rudman, F. R. R.—*Central Provinces District Gazetteers. Mandla District.* Vol. A, pp. 52, 53, 56 (1912).
9. Russell, R. V.—*Central Provinces District Gazetteers. Betul District*, p. 53 (Allahabad : 1907).
10. Russell, R. V.—*Central Provinces District Gazetteers. Chhindwara District*, p. 44 (Bombay : 1907).
11. Russell, R. V. and Hira Lal.—*The Tribes and Castes of the Central Provinces of India*, Vol. III, pp. 97, 98 ; Vol. IV, pp. 81, 106 (London : 1916).

EXPLANATION OF PLATE 6.

"SCAPEGOAT" AND ITS ORNAMENTS.

a. Photograph of the fully decorated "scapegoat."
b. Photograph of the ornaments removed from the "scapegoat

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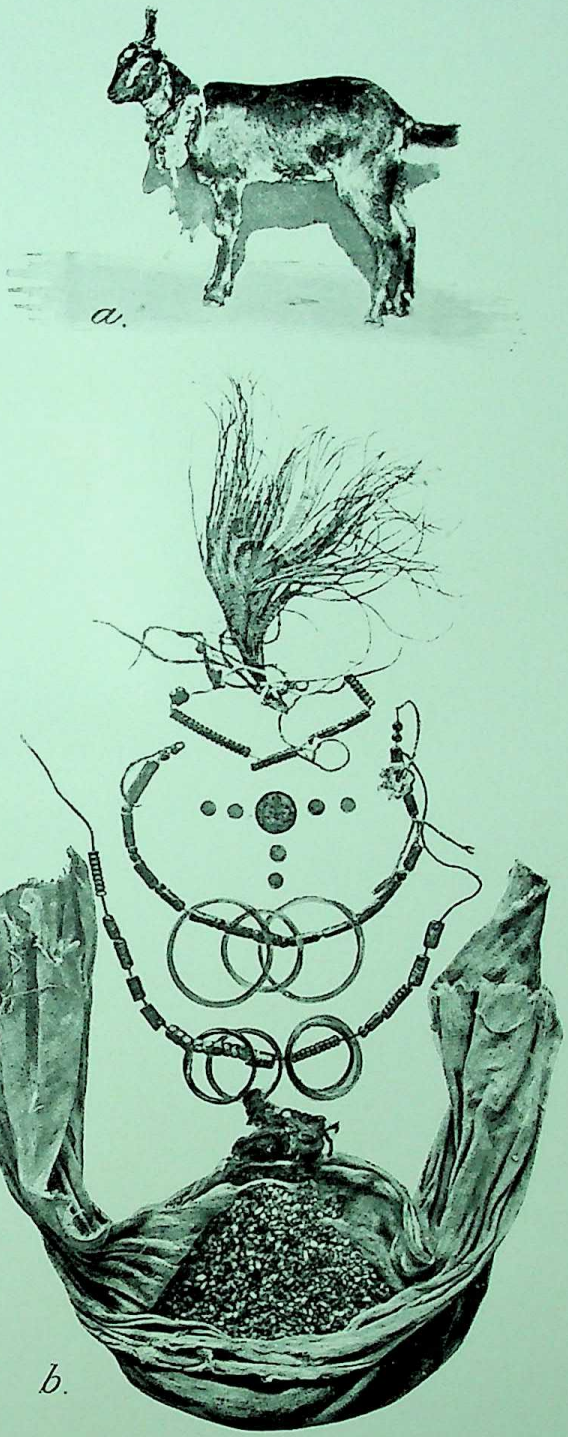

"SCAPEGOAT" AND ITS ORNAMENTS.

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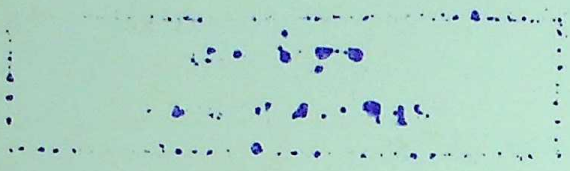

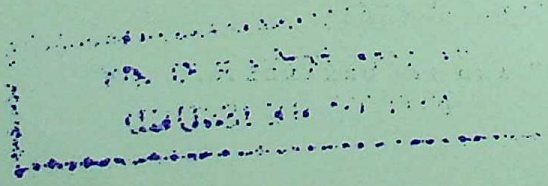

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सन्दर्भ ग्रन्थ
REFRENCE BOOK

A Few Types of Sedentary Games prevalent in the Punjab.

By Hem Chandra Das-Gupta, M.A., F.G.S.

Introduction.

The details of the games recorded in this note were obtained from the district of Mianwali which I had occasion to visit last October in connection with some geological work. The information was gathered mainly from my Pathan coolies, but the games are played by all classes of people of all ages and both sexes. The diagrams used for the games are often found inscribed on slabs of rocks, but improvised diagrams are also very often to be met with. The games to be described are known as *do-guṭi*, *tre-guṭi*, *nao-guṭi*, *sher-bakar*, *ratti-chitti-bakri*, and *khutkā-boiā*. All the games are for two players.

Do-guṭi.

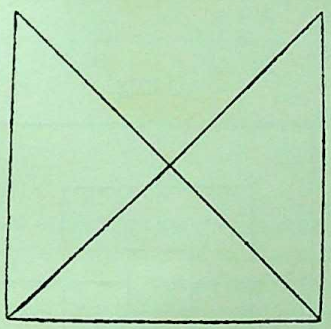

Fig. 1.

As is implied by the name *do-guṭi* (=two *guṭis*, or pieces), each player begins the game with two *guṭis* which they have to place on any of the 'cross-points' alternately. The movement of the pieces then begins from one 'cross-point' to the next along the lines as drawn in figure 1. Each player tries to checkmate his adversary by these movements, and whoever succeeds in this attempt is the winner. In this game no piece may be captured by any player.

Tre-guṭi.

As is implied by the name, the game is carried on with three pieces for each of the two players, who have to place

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them on any of the cross-points alternately. The movement of the pieces begins after all the six pieces have been properly located. The pieces have to be moved along the lines as drawn in figure 2. The aim of each player is to capture the pieces of his adversary by making his own piece jump over that of

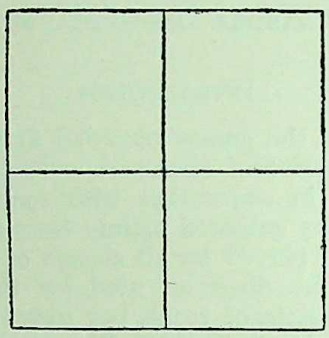

Fig. 2.

the other whenever there is a vacant 'cross-point' in front of the latter and in the same line. The player who succeeds in capturing all the pieces of his adversary in this way is the winner of the game.

Naq-guṭi.

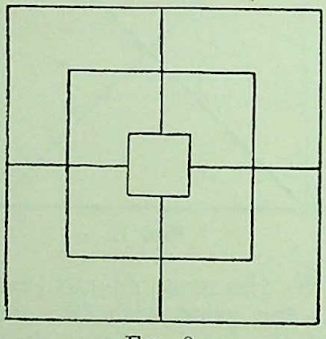

Fig. 3.

In the game of *naq-guṭi* (=nine pieces), each of the two players provides himself with nine pieces and alternately puts one of his pieces on the 'cross-points,' endeavouring to get three pieces along one line while preventing his adversary from doing so. Whenever a player succeeds in getting three of his own pieces in one line, he captures one of the pieces belonging to his opponent. After all the pieces have been put on the 'cross-points,' the players begin to move their pieces alternate-

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ly and along the lines as indicated in figure 3, having always in view the two-fold object outlined above. The player who captures all the pieces of his adversary is the winner.

This game may be compared to two types of games prevalent in Vikrampur, Eastern Bengal. They are known as *bāra-guṭi pāit-pāit*, and *tin-guṭi-pāit-pāit* and have been described by Mr. B. Das-Gupta.[1] The rules of the game are the same, but the diagrams used are different, though the difference between the diagrams used for *naō-guṭi* and *bāra-guṭi-pāit-pāit* is very slight, that for the latter being only a little more elaborate and consistent with the increase in the number of pieces required for the game.

SHER-BAKAR.

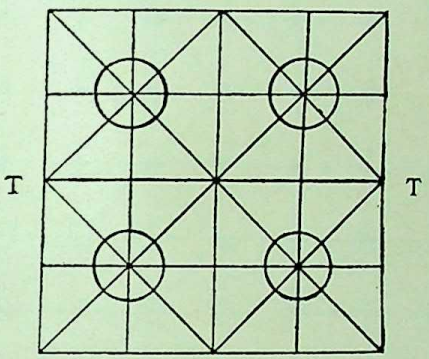

FIG. 4.

The game of *sher-bakar* (=tiger and goats) is a tiger-play. Of the two persons necessary for this game, one is in possession of two pieces representing the tigers and the other of nineteen pieces representing the goats. The latter pieces are placed within the circles marked in figure 4, 15 being equally divided among 3 circles while four are located in the fourth. The two tigers are located at the 'cross-points' marked T. As in all types of tiger-play, the goats and the tigers may usually be moved from one cross-point to that lying next to it, except in the case where a tiger may jump over a cross-point with a goat on it and capture the goat, the cross-point next to the goat and in the same line being vacant. Not more than one goat may be located on one cross-point, but more than one goat may be kept within the circles indicated in the diagram. When the tiger-piece jumps over two or more goats within a circle and occupies the next vacant cross-point in the same line,

[1] Quart. Journal Vangiya Sahitya Parishad, Vol. XIV, pp. 241–243, 1314 B.S.

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not more than one goat may be captured. One of the players tries to capture all the goat-pieces, and the other to checkmate the tiger-pieces one of which has to be checkmated immediately after the checkmating of the other.

There is a good deal of similarity between this game and a type of tiger-game prevalent in Eastern Bengal.[1] Reference may also be made in this connection to a type of tiger-play prevalent in parts of Orissa,[2] and Kolhan,[3] and to the game of Rimoe found in parts of Sumatra.[4]

RATTI-CHITTI-BAKRI (RED-WHITE-GOATS).

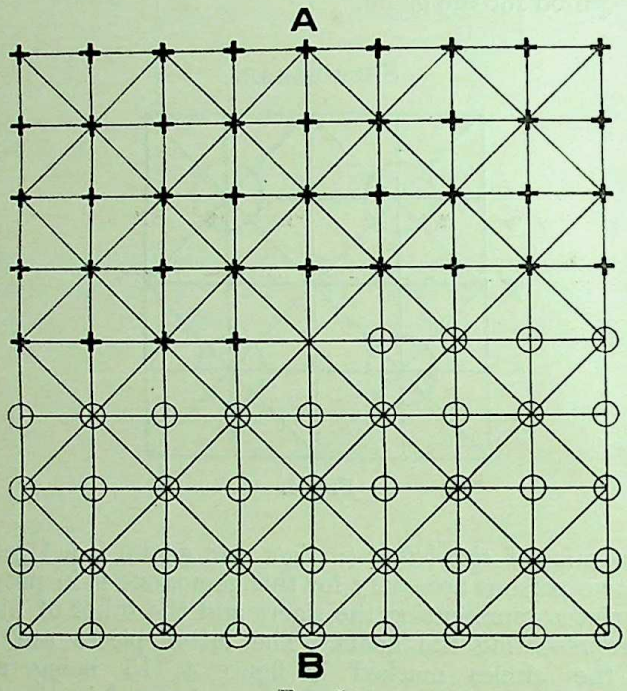

FIG. 5.

As is shown in figure 5, there are 81 cross-points, and each of the two players is the possessor of 40 pieces, the central point being left vacant. The rules that are followed in playing this game are exactly the same as have been described in connection with the game of *bāra-guṭi*.[5] As is implied by the

[1] Quart. Journal Vangiya Sahitya Parishad, Vol. XIV, pp. 240-241, 1314 B.S.

[2] For a summary of this paper see Proceedings of the Tenth Indian Science Congress, p. 235.

[3] Man in India, Vol. V, pp. 196-197, 1925.

[4] Tijdschr. Ind. Taal-Land-en Volkenkunde, Deel LVIII, pp. 8-10, 1919.

[5] Cal. Rev., New Series, Vol. 6, No. 3, pp. 510-513, 1923.

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name, one of the players carries on the game with pieces of red stone, and the other with pieces of white stone, there being an abundant supply of both types of stone in the area round Mianwali.

There is a great deal of similarity between this game and the game known as Satul prevalent in Sumatra,[1] the only distinction being that in the Sumatra game, two additional triangles with their apices at A and B are required. Each of these two triangles has six cross-points, so each player has to provide himself with 46 pieces instead of 40 as in case of the Punjab game.

KHUTKĀ-BOIĀ (DUG CIRCLES).

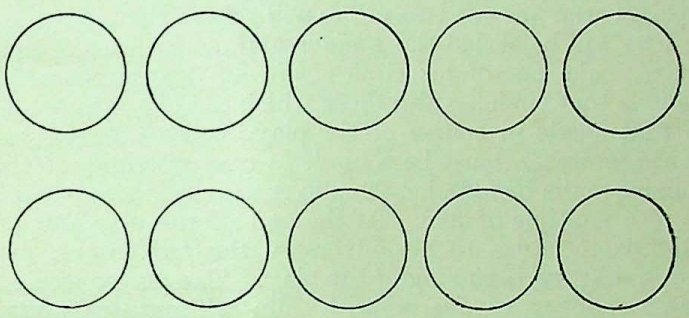

FIG. 6.

Two persons are necessary for playing this game, and, as shown in figure 6, two rows of five circles are required, each row belonging to one player. As is implied in the appellation *Khutkā*, i.e. dug or inscribed, the circles are usually scooped out in a slab of stone. At the beginning of the game five pieces are placed in each hole so that each player requires 25 pieces. The rules that are followed are generally like those already described in connection with *Mawkar-katya* and a few other similar games,[2] the pieces being moved from left to right. Among the deviations from the rules previously described may be pointed out one, according to which each group of four pieces which may be found within any hole in the row belonging to a player falls to the share of that player.

At the end of each game the players may have the same number of pieces or one of them may have pieces in excess of those obtained by the other. The difference between the number of pieces belonging to the two players may be less than five, or more than five. If it is more than five, then all mul-

[1] Tijdschr. Ind. Taal-Land-en Volkenkunde, Deel LVIII, pp. 10-11, 1917.

[2] Journ. Asiat. Soc. Bengal, N.S., Vol. XIX, No. 3, pp. 71–74, 1923.

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tiples of five belong to the winner, and the corresponding number of circles belonging to the other player will be supposed to be non-existent and no pieces are to be thrown in them. When the difference is less than five, or when the number of pieces belonging to the winner is in excess of a multiple of five, the sum of the excess pieces which are with the two players will be five, and these excess pieces may be distributed either in such a way that one player will have four pieces and the other only one, or one player will have three pieces and the other only two. In case of the former alternative, the player with four pieces of stone will be styled the *Bhādār*, while the other one will be called the *Kungidār*,[1] and in course of the play the *Kungidār* will receive one piece at the commencement of each deal whether it is started by him or by his adversary; in case of the latter alternative the player who has got two pieces will return them to his adversary who will be styled the *Bhādār* and, as such, shall have the right to make one of his circles *bhā-*, i.e. the pieces which are already in that circle, as also those which shall have to be dropped into that circle in course of the play, will all belong to him. The *bhā*, however, must be a circle at one extremity of the row belonging to the *Bhādār*, i.e. the player who has three pieces in excess of a multiple of five. At the end of the play the *Bhādār* shall have to return to his adversary the two pieces obtained from him at the beginning of the play. The player who has the greater number of pieces with him without any restriction as to the time or the number of games is considered the winner.

Conclusion.

Six different types of sedentary games have been described and, as far as is known at present, nothing similar to the first two has been recorded from other parts of India. Of the remaining four, one is parallelled by a similar game prevalent in parts of Bengal, while another is a type of tiger-play similar to some games played in Bengal and Orissa. Of the two remaining games, that of *Khutkā boiā* is similar to certain games prevalent in parts of Assam, Orissa, and the Madras Presidency, while a very primitive example of this type of game, known as *satgol*, is found in the Central Provinces.[2] The resemblance between the Sumatra game of *Satul* and the Punjab game of *Ratti-chitti-bakri* is very striking and strongly supports the possibility, as already suggested,[3] that it is of Indian rather than of Malayan origin as held by Jacobson.[4]

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[1] The meaning of the word has not been determined.
[2] Journ. Asiat. Soc. Bengal, N.S., Vol. XX, No. 5, pp. 165-169, 1925.
[3] Cal. Rev., Volume 6, No. 3, pp. 512-513, 1923.
[4] Tijdschr. Ind. Taal-Land-en Volkenkunde, Deel LVIII, p. 10, 1919.

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Marriage and Betrothal among the Hos of Kolhan.

By D. N. MAJUMDAR, M.A.

1

Nearly a century ago, Col. Tickell attempted a rough census of the people of Kolhan and it is the earliest census of the Hos we possess.[1] The East India Company received an annual rent of Rs. 6,500 at the rate of 8 annas per plough, so that there were about 13,000 ploughs or men and thus, with the ploughs concealed at assessment, which Col. Tickell calculated to approximate $\frac{1}{8}$th of the total number of ploughs recorded, we get the total number of the Hos as 14,625. This was perhaps the net adult male population of Kolhan, I mean the Hos. Seven-eighths of this total number Col. Tickell found to be married, and this was the state of affairs in 1838–40. So whatever might have been the social position of women in the then Ho community, whether they were sought as partners for weal or woe or as valuable assets in domestic life, the number of marriages may be taken as a fairly satisfactory index of the domestic bliss enjoyed by them. This is also supported by the writings of Col. Tickell, Col. Dalton and lastly by Sir Herbert Risley. This unanimous verdict is that a Ho woman is most generously treated by her partner and is generally the dictator of the family she belongs to. Col. Dalton gives the following account of their domestic life.[2] "The Hos treat their wives with great consideration. The whole of the domestic arrangement is under her exclusive management. She is consulted on all occasions and even henpecked husbands are not rare. The wife always cooks for her husband and when the dinner is ready they sit down and eat together." The boys and girls had a fairly free hand in the choice of partners and the parents seldom interfered, provided the unions did not in any way serve to infringe or violate the customary tribal laws. However, this state of affairs did not continue long, for towards the close of the 19th century, we find authorities like Sir H. Risley denouncing in unequivocal terms the practice of demanding a high brideprice which changed their angle of vision and exercised a vigorous check on their simple life. The number of regular marriages decreased to an appreciable extent and lifelong celibates of both sexes were found in every village.

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[1] J.A.S.B., 1839-40. Memoirs on Hodesum.
[2] Ethnology of Bengal, Dalton.

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Not that they courted celibacy as a principle, but it was the exhorbitant price demanded for a bride which prevented aspiring young men from seeking matrimonial alliances, if their means did not permit them to do so.

"It is certainly not from any desire for celibacy" writes H. Risley,[1] "that the marriage of Singbhum maidens is so long postponed. The girls will tell you frankly that they do all they can to please the young men and I have often heard them pathetically bewailing their want of success. They make themselves as attractive as they can, flirt in the most demonstrative manner and are not too coy to receive in public attentions from those they admire. They may be often seen in well-assorted pairs returning from markets with arms interlaced, and looking at each other as lovingly as if they were so many groups of Cupids and Psyches, but with all these, 'the men will not propose.' Tell a maiden you think her well looking, she is sure to reply, 'Oh, yes I am, but what is the use of it? the young men of my acquaintance do not see it.'" They see it but they cannot afford to propose, as they know what it means to them. On account of the prohibitive nature of brideprice, the number of marriages is decreasing every day; a man seldom marries before he is 25 and there are many cases where men do not marry at all. The average brideprice consists of thirty head of cattle, forty to fifty silver coins and ornaments covering another forty or fifty rupees, besides 200 to 300 pots of rice-beer and the cost of feeding the community, and this is extremely hard to meet for a man of average means. Being improvident the Hos possess next to nothing to meet the expenses of a regular marriage. The result is that the number of regular marriages is decreasing daily and irregular intimacies are the order of the day. The Hos are foolish, they know for a fact that if they do not moderate the rate of brideprice their girls are likely to be carried away by force, but still they insist on a high brideprice, which they seldom get. As early as 1868, Dr. Hays[2] convened a meeting of representative men of the Hos for the express purpose of discussing the question of high brideprice in consequence of which the number of marriages was annually diminishing and immoral intimacy between the sexes increasing. It was resolved that in future the brideprice was not to exceed ten head of cattle and that, if one pair of oxen, one cow and seven rupees were given, it should be received as an equivalent for the ten heads. For the lower classes, it was fixed at seven rupees. 'Whether the resolution was acted on or was not, we have little evidence to show,' but the brideprice continued as usual, and after about 50 years the Hos

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[1] Tribes and Castes of Bengal.
[2] Tribes and Castes of Bengal, Vol. 1, p. 324.

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have again taken up the matter and their attempts in this direction have been fully described and discussed in an article elsewhere.[1]

This abnormal inflation in brideprice, however, may be due to a number of more or less important causes, some of which are enumerated below. The conception of women as property is not unknown in primitive societies. So it is no wonder that women are regarded more or less as saleable commodities and the brideprice depends on the nature of the property and the demand. Coupled with this, there is the question of utility. A Ho woman is a valuable asset in domestic life. She cooks food for the family, fetches water from the river or the neighbouring tank, takes the produce of the fields to *hats* and bazars for sale or barter, does all sorts of domestic work, looks after the children, helps the men in the fields during agricultural operations and looks after the comforts of her family. The excessive drinking of rice-beer has begun to tell upon the health of the people; the men are growing weak, lazy and incapable of doing much work and in many cases have to depend on the women even for support and maintenance. This helplessness on the part of the men goes a great way to foster in them a yearning for matrimony and the demand for brides thereby increases to some extent. The parents of the brides also take the hint and demand an abnormal brideprice, which in most cases is beyond the means of the party concerned and the consequence is the prevailing discrepancy between the demand and the realisation. Not that the number of marriageable men greatly outnumbers that of the marriageable women of the tribe; contrary is the case. Women according to the last three or four censuses are always in a larger proportion than men but the number of marriages is falling off by leaps and bounds in spite of the earnest endeavours of the leading men of the community. The girls generally abide by the decision of their parents or guardian and an idea of false prestige rules their conduct. The higher the brideprice the more honourable is the bride. Love intrigues before marriage being tacitly recognised by the tribe, the brideprice as a rule is not affected by the conduct of the girl; so apparently there is no check on premarital life. Had there been a provision in the tribal code that brideprice would depend on the manner of life the girl leads before her marriage or the number of intrigues she enters into, the state of affairs might have been more hopeful. We learn from J. H. Hutton's monograph on the Sema Nagas, that the sexual restrictions and morality enjoyed by the Sema Nagas virtually depend upon this provision in the tribal code. The brideprice is very much lowered by the fact of a girl's having

[1] My article on 'Cry of Social Reform amongst the Aborigines.' Modern Review, March, 1925.

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had an intrigue before marriage. But the case with the Hos is quite different. Ho girls enjoy much sexual licence. They are found to flirt with young men of their acquaintance openly and the old people either keep aloof or connive at their conduct. The institution of village dormitories, although now on the decline, affords opportunity for young people to arrange secret meetings leading to great sexual licence under cover of night. Girls are either distributed amongst the widows of the village who may have huts to spare or are placed in charge of an elderly duenna who superintends the girls in the dormitory. But in each case the girls freely admit young men of their acquaintance to the dormitories or the huts of the widows in spite of the attendance and supervision of the duenna. The latter prefers keeping aloof from these meetings and this acts as an encouragement to the young couples. Very trifling presents from the young men have been found to be sufficient bait for the girls to flirt in an outrageous way.

However, the outlook is gradually changing and it is to be hoped that the remedy will soon be forthcoming. The recent reform campaign in Singhbhum by the Ho leaders is a step in the right direction.

The customary tribal laws regulating marriage are few and simple. A Ho is endogamous as regards the tribe and exogamous as regards the septs which are but divisions of the tribe. There are forty to fifty septs amongst them and the rule is that a man cannot marry a girl of his own sept.[1] A member of the Deogam sept will not marry a woman of the Deogam sept but of a different sept, say the Banra or the Sawaia. The belief connected with these septs is that the members of a sept are descended from a common ancestor and blood relationship forbids any intermarriage within the sept. A Ho in the same way will not marry a girl of a tribe other than the one he belongs to. There is another taboo no less strictly obeyed, which forbids a Ho to marry a woman of the village he lives in. This is known as local exogamy; the violation of this taboo is regarded as an insult to the community and the Ho *punch* (council of elders) severely deals with the offender. He is often asked to leave the village or else he is ostracised and his family is looked down upon by the other people of the village.

Infant marriage is non-existant, marriage being always performed after puberty, the approximate age for the girl being usually fifteen or over and that of the boy never below twenty. In a case where the boy happens to be the only child of the parents, the rule may be violated and marriage may take place at twelve or earlier, but a second ceremony has to be performed at puberty or before cohabitation is allowed. This is known as

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[1] See page 154.

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'Bandhparha.' Early marriage was never an indigenous institution with the Hos and may be ascribed to Hindu influence. Till recently they were innocent of this practice. Now that matches are settled and to a great extent consummated by the wish of the parents concerned, the institution may in time gain some ground.

The position stands thus. A man cannot marry a woman of a different tribe much less a woman of his own sept or within the prohibited degree of consanguinity and lastly he cannot marry a woman of the village he lives in. The origin of local exogamy may be traced to a time when each family had a particular area to itself. In course of time the family multiplied, the settlement expanded and the family spread into a community. Even now it is found that a village is generally peopled by one particular sept with here and there a sprinkling of a few families belonging to other septs but it is always possible to trace them by inquiries. For example the Kalundi sept is found mostly in Kokchak, the Banra in Chiru and the Baraimunda in Jorapukur.

A Ho may marry his brother's widow and also the proposed bride of his deceased brother. Marriage with the mother's brother's daughter and the father's sister's daughter (or first cousins) are very much liked by the Hos. In case a man marries a girl other than the mother's brother's daughter he has to offer presents to the mother's brother. This is obligatory and no marriage takes place without the express approval of the mother's brother. In the same way the nephew is invited and satisfied with presents by the mother's brother, should the latter marry his daughter to a bridegroom other than his nephew. The mother's brother has also to pay something towards the expenses of his nephew's marriage. Marriage with the mother's step sister is also allowed. The mother's sister belongs to a sept other than that to which he himself belongs, so that there is practically no bar to his marrying her, but, as the mother's sister is related by ties of blood, a Ho may not marry her. A Ho is by necessity monogamous but he has a marked tendency to polygamy, which is the fashion with the rich amongst them. The number of wives indicates the wealth of the husband. Each wife is given a separate hut, and special care is taken to avoid quarrels between co-wives.

Although sexual intercourse before marriage is not publicly recognised by the Hos, in consequence of the custom of high brideprice there is very little restraint in the intercourse of the sexes and the young people form a society of their own where they indulge in flirtation to a great extent. The elders of the village sensibly keep aloof from them. When flirtation is carried too far and the pair are detected, the elders of the village decide in favour of marriage and the brideprice has to be paid by the young man or his father, if the latter is alive. When the

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pair happen to be of the same sept and marriage is not possible between them, the villagers bribe some young man of a different sept to marry the girl and the money required is realised from the offending young man. Liaison between the members of the same sept is regarded as a communal affront and the Hos most severely denounce it. I have been told that cases of liaison between the members of the same sept were ruthlessly dealt with in early days, but, considering the number of such cases at present, the Ho community has very much relaxed the rein and offenders are simply ostracised or asked to leave the village. In both cases the punishment has ceased to have any moral effect on the people, as the coal-fields of Bengal and Behar and the industrial centres in the neighbourhood afford shelter to the offenders.

The following are the chief septs of the Hos of Kolhan:—

(1) Banrâ
(2) Deogam
(3) Hemborom
(4) Birua
(5) Sawaiya
(6) Bari
(7) Alda
(8) Purty
(9) Pareya
(10) Gagrai
(11) Tamsoi
(12) Soyai
(13) Buriuli
(14) Jamuda
(15) Honhaga
(16) Khandium
(17) Kudedah
(18) Laguri
(19) Leangi
(20) Shinku
(21) Malgundi
(22) Hesa
(23) Bandhia
(24) Balmuchu
(25) Theu
(26) Haiburu
(27) Hasda
(28) Tubid
(29) Boipai
(30) Samad
(31) Jarika
(32) Tape
(33) Godsora
(34) Mundri
(35) Sureen
(36) Dighi
(37) Bodra
(38) Kerai
(39) Jerai
(40) Sundhi
(41) Barai-Munda
(42) Kalundia
(43) Kunkal
(44) Janko
(45) Kayum
(46) Kaika
(47) Dorai
(48) Charad
(49) Lama
(50) Pingua
(51) Kuntia
(52) Charabayads
(53) Lugum

2

There are some six forms of marriage prevalent amongst the Hos of Kolhan (1) *Andi*, (2) *Dikku-Andi*, (3) *Apartipi-Andi*, (4) *Anader*, (5) *Herom-chetan-Andi*, (6) *Sanga-Andi*. Besides these there is the custom of marrying the younger sister of the wife after the latter's death. Co-habitation is also allowed with-

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out any interference from the community, when a couple who take a fancy to one another live together as man and wife by mutual consent. But when a child is expected the pair are obliged to marry and a certain brideprice is paid to the bride's father.

Andi:—When a Ho boy reaches marriageable age, his parents engage a matchmaker or '*dutam*' whose duty it is to find out a suitable bride for the boy. In all cases the bridegroom's party has to pay the dowry, consisting of cattle, jewellery and money to cover expenses. The first thing the '*dutam*' does is to ascertain the maximum '*gonom*' or brideprice that the parents can afford to pay. The parents of the bridegroom gives a list of their possessions, chattels and movables; an account is taken of them and the '*dutam*' suggests a brideprice. If this falls within the means of the parties concerned, the *dutam* undertakes to negotiate on their behalf and he goes to find out suitable brides who may be accommodated within the price specified. In all cases it is the brideprice that counts and this as a rule depends more on the social position of the bride than on her personal charms. Of course personal charms count to some extent but the general tendency has been of late to give precedence to high parentage than personal beauty. [A Manki (head of a village-group) therefore seeks alliance with a Manki, preferably of greater affluence than himself, while a Munda (head of a village) will seldom marry his son or daughter to anybody other than the daughter or son of another Munda]. The evils of the caste system have begun to percolate and it is not unlikely that within a couple of decades the Hos may also settle down into social groups based on caste formulas although they may not at the same time admit of such rigidity and cohesion as characterises the present caste groups. Apparently a Ho is eligible to marry a girl of any sept other than the sept he himself belongs to, provided it does not affect the ties of consanguinity. But in practice it is not so simple and the Hos themselves know where the pinch is. As far as my observation goes, it is the social position of a Ho that determines his circle of possible alliance and this social position is virtually the outcome of his material circumstances. What the caste system has done and is still doing in Hindu society, class considerations are doing amongst the Hos. Material prosperity, instead of cementing the tribal interests, is exercising disintegrating influences amongst the Hos and, though there is no caste system among them, precedence is given to the rich and they constitute a hierarchy which may ultimately lead to social gradation in the tribe.

Before the *dutam* sets out to seek for brides, he approaches the bridegroom and asks him whether he has any predilection for any particular girl of the neighbourhood. This is done very confidentially. If the bridegroom answers in the affirmative, the

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dutam's task is much simplified ; he goes straight to the bride's father and negotiations are began at once. Although in the *Andi* form of marriage, bridegroom and bride are more or less passive agents and the whole affair is settled by the wish of the parents concerned, yet the final choice lies with the pair. It is therefore only prudent for the *dutam* to consult the bridegroom first of all. Generally speaking every young man has his attentions fixed upon some girl or other of the neighbourhood. If the girl is not of the same sept or of the same village and if her social position is not such as bars any alliance with the bridegroom, it is easier to settle terms with her parents than with strangers. In the former case mutual attractions play a great part in bringing about the union and the parents on both sides are to some extent accommodating towards each other.

Dikku-Andi.—This is a later adoption of Hindu procedure ; a priest is called in and the marriage is celebrated in accordance with Hindu ritual. This form of marriage is very rare, and it is only the more educated Hos who are trying to introduce this procedure. It is due to a growing desire of the educated Hos to be recognised as Hindus. A glance at the recent census figures will show that the desire has begun to materialise and people have already begun to differentiate themselves from the animists by identifying them with the Hindus.

Apartipi Andi.—It is a form of forcible marriage. It has been already pointed out that an average Ho finds it very difficult to enter into ordinary matrimony—so it is likely that he should try other means. Apart from the question of utility or the conception of property in woman, no one favours an unsettled life, and a Ho is particularly anxious to marry and lead a wedded life. As this is hardly possible for a man under normal circumstances he tries other avenues, having recourse to elopement or forcible abduction. So if any young man takes a fancy to a young girl and if he is afraid that it may not be feasible for him to marry her, he takes away his bride by force to his house where he keeps her as his lawful wife. As it is not advisable or practicable to carry her from her house, he seeks opportunities when the girl comes out of the village or is on her way to some market, and carries her away to his own village. If the girl is strong, they fight it out, but if the girl is overpowered, she is led against her will to live with her victor as his wife. This abduction is not regarded as derogatory by the girl and it is found that girls in some cases silently approve and even relish the conduct of the man. One of the causes why a girl takes this form of marriage as a matter of course and calmly resigns herself to her fate, may be attributed to an idea of seeming pride arising from a consciousness of social status or personal charms. However, no ceremony is performed to regularise such a union. If

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the girl does not like to remain with her lover, she tries to escape and, whenever an opportunity occurs, she flees to her paternal home. The lover has again to carry her back forcibly. This process is repeated thrice, and in the event of her escape again he gives up all hope of her. The parents sometimes, when they find that their girl does not like the man, come to the man and demand the girl. The community is passive here, it does not take cognizance of this union. In case a child is expected or arrives, the parents of the girl come and demand the usual brideprice, which the man must pay. Besides, the man has also to pay towards the expenses of a feast in which the community takes part.

Anader.—This is a form of what is generally known as 'intrusion' marriage. If a young man and a young girl fall in love with each other and if circumstances stand in the way of their union and negotiations fall through, the girl, if she likes the boy, of her own initiative enters the house of her lover to stay there as a drudge, to see whether she can, by her faithful service, enlist the sympathy of the members of the house sufficiently to allow her to become in the end the young man's wife. During this time, of course, the girl takes all possible care to please everyone in the house. This bold step is only possible for girls of strong character and it is gratifiying to note that such girls never waver in their resolution, but ultimately gain their point and are admitted as lawful partners of the young man whom they adore.

Herom-Chetan-Andi.—Taking a second wife during the life time of the first; each wife addresses the other as her 'herom' and they themselves are addressed by the outsiders as 'heroms' of one another. The first wife remains, however, the mistress of the house and the other wives live separately in their respective huts.

A detailed review of the customs and practices of the Hos with regard to marriage and betrothal is given below.

3

(*a*) *Andi.*—It has already been mentioned that the bridegroom's party has to pay a dowry to the parents of the bride, the amount being settled by the *dutam*; in some cases, proposals may be advanced by the parents of the boy directly without the interference of the *dutam* and as a matter of fact the mediation of the latter is sought more for expediency and convenience than because of convention. Whether the custom of engaging a *dutam* or middleman for negotiations is a primitive one and has come down from earlier days is not easy to settle; the word *dutam* is, however, a Sanskrit word and might have been borrowed by the Hos from their cultured neighbours the Hindus. *Dutam* means a messenger and has the same significance as *ghatak* in

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Bengal, viz. one who arranges matches. In all cases it is safer to secure the services of a *dutam*, and Ho parents prefer to keep themselves in the background until the negotiations have advanced to a certain extent. After settling the preliminary terms the *dutam* informs the parents of the bridegroom, who, in consultation with the *dutam*, settle on an auspicious day on which the guests from the future bridegroom's house may be received at the house of the proposed bride. The Hos have no prejudices against women in these preliminary visits, so the relations of the bridegroom, male and female, proceed to the bride's house to see the bride. The bridegroom also accompanies the party. They take with them pots full of rice-beer, he-goats, rice, and fowls, with musical instruments to cheer them up on their journey. As soon as they reach the house of the bride, the members of the house are all attention to the guests. The latter take their seats on wooden stools or mats spread in the court-yard and two women (either of the family or hired for the purpose) wash the feet of the guests. Thus refreshed they drink the health of all present, after which they begin to discuss the omens that may have befallen the party on their way. This is done in all seriousness, for they believe that the nature of the omens determines the success of the marriage. If the omens are good, the marriage is expected to be prosperous and happy; but if unlucky there is no knowing how far they may affect the proposed union. In some cases, sacrifices are offered to particular spirits to counteract the presaged evils. If the apprehended evils cannot be ignored or passed over, the parties generally decide to break off the proposed union for the time being. This is done by the '*dutam*' who takes a '*sal*' leaf, mutters a few incantations in honour of *Singbonga*, and in the presence of all assembled divides the leaf into two so that all talk of marriage is hushed for the time. The parties take leave of each other and the bridegroom's party return to their village. If in future they again desire the alliance, negotiations are begun afresh. In all cases the Hos attach much importance to omens and divinations and before they undertake any work that is likely to affect the well-being of the individual or the community they put their heads together to decipher the nature of the omens they may encounter. Should the omens prove lucky, they will at once start on the business in earnest, as they say they are sure to come out successful and are never likely to regret their action.

A detailed list of omens is given in the Appendix, page 166.

In case the omens are satisfactory, the parties sit together and discuss terms. A preliminary settlement having already been made by the *dutam*, it is for the bride's party to work out the details. The deliberations keep the parties engaged for several hours, during which the people drink large quantities of *handia* to keep up their spirits. The bridegroom's party do not,

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as a rule, take any food offered by the bride's party. They come provided with rice, pulse, he-goats, fowls, and such articles as are required for cooking their meals. So that they are not at the mercy of their prospective relations. Even if they are short of provisions they resent any supply from the bride's people till the marriage arrangements are *pucca*. The night is spent in dancing and frivolity by the young people, and the elder generation spend the time in visiting their old acquaintances and making new ones. The bridegroom has to take part in the village dance where he is joined by the female companions of the bride. The dance at the *akhara* is also attended by the elderly people of both sides before whom the dancers try to show themselves at their best. This is also a test of the bridegroom who unsuspectingly plays his part in the dancing ring.

The next morning proves a busy time for the members of the bride's family. The courtyard is cleaned and rinsed with cowdung solution. Mats are spread on the ground, and all the relations on either side are invited to assemble there. The bridegroom takes his seat in the centre and waits for the arrival of the bride. Soon after, the bride is brought in by her female companions and led to a seat placed opposite that of the bridegroom. For the first time the bride and the bridegroom exchange glances and have to inform the spectators of their mutual approval. This is done by offering *handia*. The bridegroom first offers *handia* in a cup made of *sal* leaf to the bride who, if she approves of him, has to distribute the liquor to all her relations, male and female, before partaking of it herself. The bride on her side then offers the liquor to the bridegroom, who has also to repeat the same procedure. Refusal of either party to accept the proferred liquor brings the negotiations to a close. It is to be noted here that the refusal generally comes from the side of the girl, for the other party has made up its mind before coming to the spot. If the worst happens, the parties sit together to decide how to make up the loss the bride's people have incurred. The decision generally is that the bride's party are invited by the bridegroom's party to their village at a later date to partake of a feast specially arranged for them. But this seldom occurs as the first refusal is generally made up by offering a dowry higher than that formerly agreed upon.

In case the bride and the bridegroom mutually approve of each other, and an alliance is agreed upon, the bride's party has to fix a day when they will come to the bridegroom's house. This time also care is taken to note the omens that happen on the way and before they begin to discuss other matters, they ascertain from the omens whether the alliance is expected to turn out happily. Generally the bride's party consists of a few male members of the bride's family and of the village, and women do not accompany the party. On the fixed day the party arrive at the house of the bridegroom. Their feet are washed

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by the villagers and they are treated with great respect and consideration. Mats are spread in the courtyard, when they are offered '*handia*' and '*ficcas*,' which they smoke. If the party arrives in the evening, the dowry is not shown to them till next morning and the night is spent in feast and dance. If, however, the party arrives in the morning, they may examine the dowry the same day. The bride's party very carefully examine the cattle and, if these do not seem up to the mark, a compensation price in lieu of stronger animals is demanded of the bridegroom's father. This being settled, they leave the place. A feast is also held in honour of the bride's party and the date for the ceremony is fixed on the spot. The dowry they take home the same day.

On the morning of the day appointed for the ceremony, five to ten male members from the bridegroom's party leave for the bride's house with pots full of rice beer and presents, to escort the bride to the village. If the bride's village happens to be far off, they set out on the previous night so that they may reach there in time to start with the party. The bride's party consists of relations of the bride, male and female, and most of the male members of the village, who accompany the bride and offer to fight the bridegroom's party when they reach the outskirts of the latter's village. Sufficient quantities of rice beer are taken to refresh the party on their bridal march. Rice beer is a food as well as a drink and a great restorer of energy. As soon as the party approach the outskirts of the bridegroom's village, they are met by the bridegroom's party, headed by the bridegroom, mounted on a man's shoulder with bows and arrows in hand, and a mock fight takes place with beating of drums and playing of flutes by the retinue on either side. The whole scene reminds one of the mock skirmish got up by Mahomedans during the Muharrum festival. Whatever it may be, this custom is certainly a survival, a survival of a primitive wide-spread practice of marriage by capture. At present the custom seems to be an artifical means of commemorating the primitive usage. The skirmish lasts a few minutes when suddenly the bride's people take to their heels. It is customary to use slang and filthy words in vilification of one another on this occasion, but the corrupt patois they use is too wild and vulgar to be printed. With the termination of this mock tussle, the first act of the drama ends and the bride is led to the bridegroom's house in a closed circle, as a captive, surrounded on all sides by the bridegroom's people. The guests are then greeted with cheers and another set of formalities is gone through.

In the bridegroom's house :—In response to invitations, relatives and friends of the bridegroom's family have already assembled in the bridegroom's house from the previous morning. They bring with them rice, fowls, he-goats, rice beer and such vegetables as are relished by the Hos - which are presented to

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the bridegroom's parents. It is a relieving aspect of a Ho marriage that the relatives and friends supply their own food, and thus are no burden on the bridegroom's resources. But *handia* is freely supplied by the host and 200 to 300 pots of rice beer are consumed in a day or two.

The bridegroom has practically to fast all day but he is allowed to drink rice beer if he likes. Towards evening when the bride is seen to be approaching the village, the bridegroom takes leave of his mother in a most pathetic way. The mother has been weeping the whole day, and seldom speaks, and when the bridegroom approaches her she embraces him and clasps him in her arms. The boy is asked where he is going The boy says that he is going to fetch a girl who will help her in domestic affairs and serve her as a slave. The mother being thus re-assured, the bridegroom takes leave of her to join the party assembled at the boundary line of the village when they expect to meet the bride with her followers. In the courtyard of the bridegroom's house a dais has been erected and over the dais there is a temporary *pandal* raised by placing blackberry branches on four bamboo posts, erected at the four extremities of the dais. Soon after, the bride with her hair untied and dishevelled is brought in and is led to a wooden seat placed on stalks of grain spread on the dais, and very close to the bridegroom's seat. Here the *deuri* (priest) makes incantations in honour of *Singbonga*, and other *bongas* of the Ho pantheon, after which the spirits of the ancestors are invoked. The actual ceremony is very simple and is completed within a few minutes. The bride and the bridegroom have already been anointed with oil and turmeric paste and it now only remains to pour oil on the bride's head. Rice is boiled on the spot in a new small earthen vessel and the '*mundi*' (a rice preparation) is offered to ancestral spirits. The bride and the bridegroom are then asked to touch the boiled rice offered them in a leaf-dish and the girl thenceforward is declared to belong to her husband's sept. In some parts of Kolhan bride and bridegroom sit on the knees of the latter's maternal uncle and the bridegroom paints vermilion on the forehead of the bride who in her turn repeats the same operation on the bridegroom. With the painting of vermilion the ceremony terminates and the couple are conducted to a hut where they are hailed by the female friends of the bride. There they indulge in tests of wit and humour, and questions are hurled at the bridegroom from all corners, which he must answer to save himself from being called all sorts of unpleasant things that may be showered on him in case he fails to prove his worth. The rest of the relatives and friends on either side retire to the village *akhara* where they get up a dance which is kept up all through the night.

On the following morning the bride and bridegroom's parties take part in the dance, in which the couple also join.

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The dance continues till noon, when the bride's people are treated to a feast, after which they prepare to return to their destination. The bride and the bridegroom have to salute all the members of the bride's party, young and old, and I am told it is imperative that they should do so. After a farewell dance, the party return home.

The ceremony is continued in the bridegroom's house for two, three or seven, days, as permitted by their resources. During first few days the bride cannot be persuaded to partake of any food offered in her husband's house and she has to live upon such provisions as may have been supplied by her own people. The bridegroom and her parents entreat her to take food but she refuses to do so until some settlement is made with her. She insists on presents or money, which she thinks she has a right to demand of them as the price of her liberty or prestige, or both. When persuasions fail, some sort of compromise is arrived at and the bride receives an ornament, a dress or a few rupees, whichever he can afford to give her. The first time the bride takes food in the house of her husband is observed by a ceremony known as '*jamesin.*' A feast is arranged, he-goats are killed and friends and relations are invited to partake of it.

After a couple of months or so, the people from the brides' house come to see the newly married couple. They bring with them presents, rice, pulses, he-goats, fowls and *handia.* They are entertained by the bridegroom's father, and a feast is held in their honour. On their return journey the bridegroom's father also presents them with he-goats, fowls, rice, pulses and such other articles of food or of domestic use as he can afford. The bride may be taken by the party, if they like, to spend a few weeks with her mother.

When a Ho girl is married before she has attained the age of puberty, she is not required to leave her parents, and the bridegroom has no authority to take her home till such time as may be thought proper by the parents of the girl. When, however, the girl has attained puberty or is deemed capable of cohabiting, a second ceremony is performed which completes the marriage. This is known as '*bandhparah.*' On an auspicious day the village *deuri* worships *Singbonga*, and prepares some rice in a new earthen pot, and the bride and bridegroom are asked to partake of the food thus prepared, after which the pair retire to the village *bandh* or tank to take a ceremonial bath. There they indulge in a peculiar hide-and-seek game which is much enjoyed by the female companions of the bride. A pair of areca nut cutters or a steel knife is thrown into the water by the bride, and the bridegroom has to pick them up from the depths of the tank. The women enter the tank and try to hide the instrument under their feet to make the search more difficult for the groom. This after all is a painful ordeal

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for the man, but he has to take it lightly for if he cannot find the instrument he is regarded as worthless and none likes to admit such a charge.

Dikku Andi:—This form of marriage differs from the former in principle. Like the Bhumij of Chota Nagpur and many of the mongoloid or semi-mongoloid tribes of Bengal and Assam originally of aboriginal extraction, who are trying to get assimilated into Hindu Society by setting up family priests who invent for them genealogical connections with the Rajputs of Central India and are adopting brahminical *gotras*, together with Hindu rites and ceremonies, the Hos also have a natural tendency to move towards Hinduism. So for a Ho to adopt Hindu rites and ceremonies is nothing unnatural and we need not be surprised to find them engaging Brahmin priests to officiate at their marriages. Elsewhere (*Modern Review*, March, 1925.) I have tried to explain how the Hos are engaging the services of Hindu priests in their indigenous ceremonies and worship-festivals. Although this form of marriage is very rare in Kolhan, it is of great interest to note how it is performed by the Hos. Not only is a priest called in but a *salgram* (black fossil ammonite) is also required in carrying out this form of marriage. The brahmin utters *mantras* or incantations, and promises of eternal fidelity are made by the couple before the *salgram*. The bridegroom has to move round the bride seven times with a steel knife in his hand, and the marriage is thus completed. The bride and the bridegroom are then conducted to a room where the night is passed in frivolous jesting, and the female relations of the bride (but not her mother) test the sense of the wife and the humour of the new bridegroom. The following morning witnesses another ceremony which resembles that observed in the *andi* form of marriage. The bridegroom paints vermilion on the bride's forehead, who in her turn does the same on the bridegroom's forehead. This concludes the ceremony and the relatives and friends on both sides set out for their respective villages after the morning meal.

Apartipi Andi.—This form of marriage is very commonly observed amongst the Hos. The reason is not far to seek. The prohibitive nature of the brideprice renders ordinary marriage too difficult for people of average or ordinary means. Besides, a Ho is generally improvident. The future is to him a void and he seldom turns his thoughts to it. He is nevertheless anxious to marry and lead a settled life. This is only possible by resorting to forcible marriage. The number of cases of abduction in Kolhan is steadily increasing and the Hos, far from discouraging the practice, wink at it. Sometimes the girl herself elopes with her lover and the parents have no other alternative but to wait till the pair expect a child. It is only then, and then alone, that the community interfere and bring about a compromise between the parents of the bride and those

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of the bridegroom. So long as the parents are alive, the family property belongs to them. So the dowry has to be paid by the parents concerned. The demand is necessarily moderated by circumstances, and the decision of the community is invited. The pecuniary position of the bridegroom's parents is carefully weighed and considered, and certain terms are offered by the elders which are in all cases obligatory on both the parties. When the settlement is agreed upon, the young man and the young girl paint vermilion on each other's foreheads before the villagers and friends of the bridegroom, and the ceremony is finished.

Anader:—The most commonly practised form of marriage is '*apartipi-andi*' and the most rare one is known as '*anader*' which is the same as the '*Nirbolok*' of the Oraons. This marriage may be termed in English 'intrusion marriage.' The girl forces herself into the family of her lover where she is seldom welcome. This extreme conduct of the girl may be defended only on the ground of a sincere attachment which induces the girl to sacrifice her position, prestige, and comforts of life to her love for the young man. Two reasons may prompt her action. If a young man and a young girl fall in love and if for some reason or other, they cannot get married, the girl takes the risk of forcing herself into the family of her lover to secure her position. Again there are cases in which a young woman admires a young man and finds no possibility of alliance; the only way open to her then is to resort to the *anader* form of marriage. Before she attempts this, she informs her guardians, who try to bring about an arrangement, failing which they permit her to act according to her wishes. The girl then sets out for her lover's village and on her arrival at the house, informs her future mother-in-law (?) why she has come and what her intention is. As soon as the mistress of the house realises the object of the girl, she is terribly incensed and begins to call her by bad names that the Ho vocabulary contains in plenty. The presents, *handia*, rice and other things which the girl may bring with her are thrown away and the girl is seriously taken to task for her abnormal conduct. At first the girl keeps silent, but when the fulminations reach a certain limit the exasperated girl denounces the mother for her undue indulgence to her son which has brought about this state of things. If the son had been properly looked after and controlled he could not have indulged in flirtations and ruined her life. The scene turns into a brawl, and the neighbours pour into the courtyard to watch the scene. The mistress of the house cannot, however, continue for long in this strain. She is usually pacified by the neighbours and the girl is allowed to stay in the house. The period of probation is, of course, very trying for the poor girl, for she has to do all the duties of the house as a menial and to earn her livelihood

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by the sweat of her brow. But her determination is rewarded in the long run by her success in gaining the sympathy of the parents of the young man and winning their confidence. When the parents find her useful, they allow the girl to remain in the house as their daughter-in-law. No ceremony is required to bring about the union and no brideprice is paid to the parents of the girl. Sometimes the trouble and hardships attending the period of probation prove too much for the girl and she runs away from the house, but this is only on rare occasions.

Herom Chetan Andi.—The Hos, as has already been pointed out, are polygamous, but, as the average Ho finds it extremely difficult to pay for even one bride, it is hardly possible for him to marry twice. It must, however, be admitted that every Ho has a great desire to possess more than one wife and if he cannot manage to secure a second wife by marriage he resorts to other means e.g. by finding out some widow or a divorcée to share his earnings with his first wife. In case a Ho keeps one or two widows as his concubines, they live in separate huts. A Ho, when he can afford it, prefers, however, to marry the sister of his wife during the lifetime of the latter, the reason for this being that if he marries the sister of his wife, quarrels between the co-wives are avoided. A Ho, like most of the aboriginal tribes, is very afraid of the family dissensions which often arise out of the jealousies and quarrels of co-wives. In case he takes a second wife he sets up a separate hut for her and thus avoids trouble as far as possible.

Sanga-Andi.—This is a form of marriage in which a widower seeks to marry a widow or a divorcée. No special ceremony is required and the marriage is completed by mutual agreement. The man and the woman paint vermilion on each other's foreheads before the villagers. No dowry is given to the bride's parents. Before the pair meet, a go-between is asked to find out a widow or a divorcée, and the meeting is arranged in some *hat* or bazar. The bride is promised all his possessions, which acts as an inducement for the bride to consent to the marriage. In case they fall out, they agree to a divorce, when an appeal is made to the village elders to decide which of them is the cause of the dissolution of the pact. An open trial is held, and the man or woman who may be found guilty is asked to pay compensation to the aggrieved party besides a sum of five rupees towards the expenses of a communal feast.

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APPENDIX.

The following are some of the omens of the Hos :—

Bad Omens.

(1) When the bridegroom's party proceed to the bride's village, if they happen to see the fall of a branch of a tree on the right side of the path they apprehend some death in the party. If the branch falls on the left side, the calamity will befall the bride's party.
(2) A jackal crossing the path, in front of the party, is an evil omen.
(3) Throwing refuse or ashes right or left of the party is bad for both bride and bridegroom.
(4) Men carrying fuel on their shoulders and women carrying it on their heads are regarded as ill-omens.
(5) The sight of a fox, when a person is on an errand to summon a doctor for a sick man, is inauspicious and the sick person has very little hope of recovery.
(6) A snake coming out of a hole is a bad omen.
(7) Sneezing by a man on the right side or in front of a male person is good for him, but it is regarded as a bad omen for a female.
(8) Sneezing on the left side or behind a male person is bad for him, but is regarded as good for females.
(9) Meeting women carrying empty pitchers on their heads.
(10) The barking of dogs, or the squealing of pigs by the road side.

Good Omens.

(1) Cattle grazing on the road.
(2) Seeing a corpse in the village or on the way to it.
(3) A cow and a calf lowing in response to one another.
(4) Meeting persons carrying pitchers filled with water either on the shoulder or on the head.
(5) A snake crossing a road.
(6) Seeing a fox (a cultivator expects a good harvest if he meets a fox while engaged in sowing seed in his fields).
(7) If a cow while grazing picks up a bone in its mouth, it indicates the addition of a new member to the family.

A comparison of the omens of the Hos with those of the Mundas may be of interest. The omens are quoted from Rai Bahadur S. C. Roy's monograph on the Mundas (p. 438). These omens are known to the Hos as well.

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Good Omens:—A Cow and her calf lowing in response to each other; paddy being carried; pitchers filled with water being carried; well cleaned and well washed clothes being carried; ploughs or yokes being made; a fox passing in front of the party; a person piling up dust; a tiger.

Bad Omens:—A person carrying an axe or spade, or shovel; a person carrying a *kumari*, or fishing trap made of bamboo; a cow bellowing but not in response to, nor followed by response from, her calf; rice being carried; sweepings of a house being thrown away; clothes being besmeared with ashes or any similar substance to clean them; a tree falling down under the axe of a wood cutter.

Alpanas.

The Ho women know the art of drawing âlpanâs (paintings on the floor); on ceremonial occasions the courtyard is swept clean and figures are drawn there as well as on the floor of the hut, where they expect their gods (or spirits) to sit. During the marriage ceremony, figures are drawn on the temporary dais, and on the floor of the hut where the bride and the bridegroom take their seats. Some of the figures are exquisitely drawn. Some of these designs are shown in figures 1 to 5, page 168.

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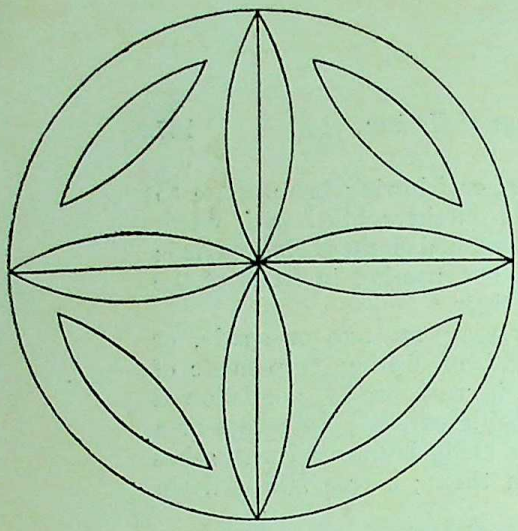


FIG. 1.

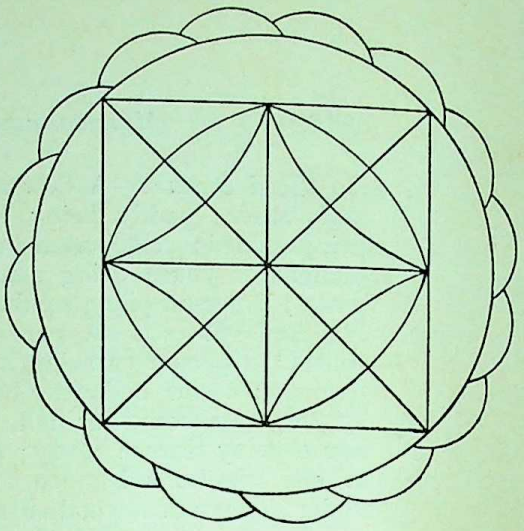
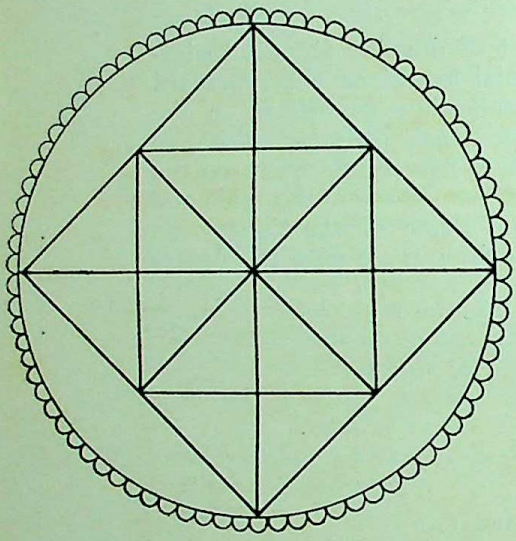


FIG. 2.



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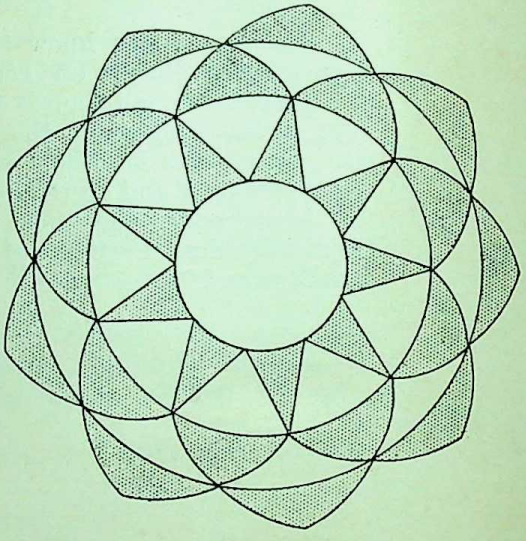

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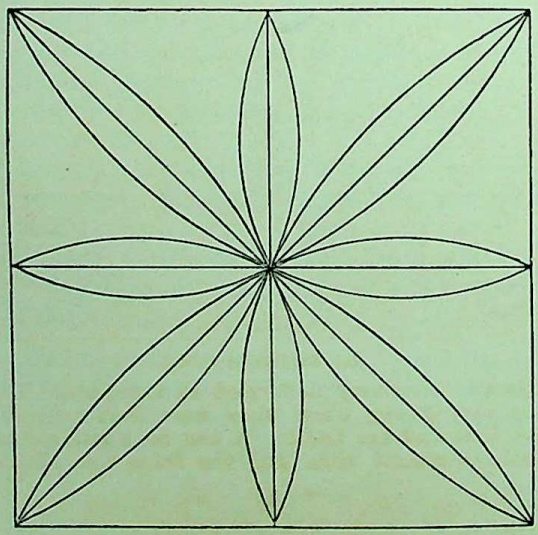

FIG. 5.

Some specimens of 'alpanas' आलपना in use amongst the Hos of Kolhan during the marriage ceremony.

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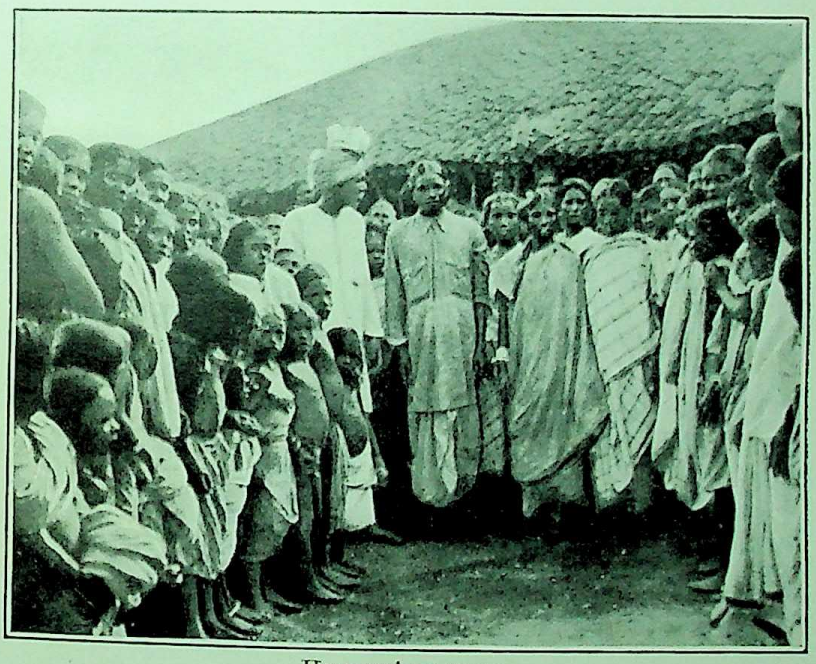
Ho marriage scene.

The bridegroom is seen waiting for the arrival of the bride while the musicians play round the '*mandoa*' (temporary shed). The ceremony was held at a village named Gundipoa, six miles from Chaibassa in April, 1924. Seated on the left is the grandfather of the bridegroom—the head of the family.



Ho marriage scene.

A 'bandhparha' ceremony performed at Gundipoa. The bride and the bridegroom were very young when they were first married and the bride remained in the house of her father. When both attained marriageable age, they were married a second time and the bride was allowed to leave her father's house.

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Some Notes on Buddhist Iconography.

By N. G. MAJUMDAR, M.A., *Museum of the Varendra Research Society, Rajshahi.*

Of the five sculptures dealt with in this paper, four are in the Museum of the Varendra Research Society at Rajshahi, and one in the Museum of the Vaṅgīya Sāhitya-Parishad at Calcutta.

1. RATNASAMBHAVA.

A stone image, marked No. A(*a*) 6 : 138, is entered under the head "Buddha Images" in the *Catalogue of the Archæological Relics of the Rajshahi Museum* (p. 2). It comes from the village of Bejgaon, in Vikrampur, Dacca District. The image does not, however, represent Buddha but Ratnasambhava, the third Dhyāni-Buddha of the Mahāyāna Buddhists. The figure is represented as sitting cross-legged on a lotus-throne, within a temple having a trifoil arch and an *āmalaka* surmounted by a *stūpa* as its crowning piece. The deity is dressed like a monk with his right shoulder bare and has *ushṇīsha* on his head and *ūrṇā* on his forehead. Of his two hands the palm of the left is placed on his lap, turned upwards, while that of the right rests on the right knee and is partly stretched out. By means of three fingers the right hand grasps an object. Below the lotus-throne, on the pedestal of the image, are the representations of the devotee and the traditional Seven Jewels, viz. horse, elephant, etc. (see Plate 8, fig. 1).

According to a *sādhana* of Ratnasambhava, "his left hand rests on the lap with open palm and the right exhibits the *varadamudrā* or the gift-bestowing attitude."[1] It does not, however, mention whether the deity should in his right hand hold any object, as is found in the image in question. A reference to the group-representations of the Five Dhyāni-Buddhas (in the Rajshahi Museum and elsewhere) will show that in these groups, Ratnasambhava, who is usually distinguished by his *varada-mudrā*,[2] appears very often with an object in his right hand. There is therefore hardly any doubt that the image described above represents Ratnasambhava. According to Getty, *chintā-maṇi* or a 'magic jewel' is placed in his left hand. That in this

[1] Bhattacharyya, *Indian Buddhist Iconography*, p. 5 Two Nepalese illustrations in this book (Pl. VIII, *d* and Plate IX, *a*) represent the deity with a bowl in his left hand which is however not according to the *sādhana*.

[2] E.g. even at Borobudur and other places outside India.

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instance, he holds the same object in his right hand,[1] appears plausible. The *Kriyāsaṁgraha-pañjikā*[2] of Kuladatta regards a jewel as one of his principal insignia, but does not mention whether it should occur in the right hand or the left.

There is another stone image of Ratnasambhava, which is in the collection of the Vaṅgīya-Sāhitya-Parishad, and this also is wrongly described, in their "Hand-book to the Sculptures" (Pl. II, No. 1 and p. 23, No. C(*a*) 6 : 271), as a 'Buddha,' seated in 'bhūmisparśamudrā.' The image is neither one of Buddha, nor is it in the *bhūmisparśa* or 'earth-touching attitude.' It no doubt represents a Dhyānī figure in sitting posture on a lotus with the palm of his left hand placed on his lap, turned upwards, as in all 'bhūmisparśa-Buddhas.' But from a careful examination of the stone it clearly appears that the right hand exhibits the *varadamudrā*. The damaged condition of the hand is probably responsible for the wrong identification. But sufficient traces remain to enable us to ascertain the position of the thumb in relation to the other fingers and this is just what one would expect in the *varada* and not in the *bhūmisparśa* attitude. The image has on its pedestal, below the lotus-throne, representations of two horses carrying on their backs the *chintāmaṇi* or the 'magic jewel'[3] (see Plate 8, fig. 2). According to Getty the carrier (*vāhana*) of Ratnasambhava is the horse. This animal is represented on the pedestal of a Sārnāth image,[4] bearing the inscription *Ratnasambhavaḥ*, and in a Nepalese painting of a group of the five Dhyāni-Buddhas.[5] The image in the Sāhitya-Parishad does not seem to hold any object in his right hand, but simply exhibits the *varada* attitude. It comes from Bhagalpur, in Bihar.

It may be noted that separate images of Ratnasambhava, i.e. not accompanied by the four other Dhyāni-Buddhas, are extremely rare. The aforesaid two images from Dacca and Bhagalpur probably show that he was at one time worshipped as a separate deity in Eastern India. On artistic grounds the period to which the images could be roughly assigned would not be earlier than the rule of the Pāla kings of Bengal.

2. Mañjuvara.

A *sādhana* of this deity, one of the varieties of Mañjuśrī, has been quoted by Mr. Bhattacharya in his *Indian Buddhist*

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[1] *Gods of Northern Buddhism*, p. 35.

[2] H. P. Śāstrī, *Descriptive Catalogue of MSS. in the Government Collection of the Asiatic Society*, Vol. I (1917), p. 122.

[3] It is not Buddha's turban as Mr. Ganguli, the author of the "Hand-book," thinks. Cf. Grünwedel, *Myth. d. Buddh.*, p. 48, fig. 36.

[4] Vogel, *Arch. Surv. Rep.*, 1903-4, p. 220.

[5] *Museum of Fine Arts Bulletin*, April, 1920, p. 14.

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Iconography (Calcutta, 1924), p. 25. The text requires that the deity should be 'decked in all ornaments,' be seated in the Lalita pose on the back of a lion, with hands in the Dharmachakramudrā, and carry the book of *Prajñāpāramitā* on a blue lotus. As the known representations of the Mañjuvara type of Mañjuśrī are few in number [1] I would draw attention to two stone images, representing the deity in the Museum at Rajshahi. They are marked A(*b*) 10 : 203 and A(*b*) 11 : 89, and described as "Bodhisattva Siṁhanāda-Lokeśvara" [2] in the *Catalogue of the Museum*, p. 4. A photograph of the first one accompanies this article (see Plate 9, fig. 3).

The two images are as follows :—

A(*b*) 10 : 203.—It represents a decorated male figure seated in the *Lalita* pose on the back of a couchant lion with its face turned upwards. The head of the lion is on the left side of the figure. The hands of the deity are in Dharmachakramudrā, and intertwined with his left arm is a lotus stalk with a rectangular object, denoting evidently the book *Prajñāpāramitā*, surmounting the flower. To the right and left of the figure there are two seated male figures. The latter holds a staff-like object and represents probably Yamāri [3] who is described in a *sādhana* as *mudgara-hastaḥ*, i.e. 'having a club in hand' (Foucher, *Ic. Bou.*,

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[1] Prof. Grünwedel published illustrations of two Tibetan representations of Siṁhanāda-Mañjuśrī and Mañjughosha, in his *Mythologie des Buddhismus* (Leipzig 1900), p. 132, fig. 108 and p. 135, fig. 110. Both of them are represented as riding on a lion and carrying the book on a lotus. Siṁhanāda has a sword in his right hand and is seated cross-legged. Mañjughosa is seated in the *lalita* pose with hands placed near the breast in Dharmachakramudrā. The main figure along with the lion rests on a lotus, while two other attendant figures appear on two smaller lotuses placed at a lower level, to his right and left. The figure to the left is a bearded one and holds a staff, and that to the right has his two hands joined in adoration. The bearded one I take as Yamāri (or Hayagrīva ?) and the one with folded hands as Sudhanakumāra. It should be noted that Grünwedel's fig. 110 (Mañjughosha) corresponds to Mañjuvara of the *sādhana* mentioned above. A figure of Mañjughosha is reproduced from a miniature painting in Foucher's *L' Iconographie Bouddhique*, Vol. I, Pl. VI, fig. 3. (The lotus in this case is not surmounted by the book.) Mr. Bhattacharya has published an illustration of a Mañjuvara discovered by Mr. K. N. Dikshit at Bara in Birbhum District (Pl. XV, *d*) with some hesitation as he is not 'sure as to the sex of the figure' (see p. 25, n.). Again Foucher has given two illustrations of Mañjuśrī on a lion at pp. 115 and 116 (figs. 15-16) of his book. But it is not certain whether these represent Mañjuśrī or Siṁhanāda-Lokeśvara.

[2] As Mr. Bhattacharya points out, Siṁhanāda-Lokeśvara 'wears no ornaments' (*loc. cit.*, p. 36) and this distinguishes him from Mañjuvara who is 'decked in all ornaments.' This dictum is, however, not observed by the Tibetan school, which makes the former also wear ornaments. Cf. *Myth. d. Buddh.*, p. 127, fig. 104.

[3] The figure might also be that of Hayagrīva, who has a staff (*daṇḍa*). It is very difficult to say which of the two is here intended. The right hand of the figure seems to be in the *Karaṇa* pose, in which case we should identify it as that of Hayagrīva.

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Vol. II, p. 40). The former appears with folded hands and carries a roll-like object supported by his contracted left arm, near his waist. He seems to be no other than Sudhanakumāra who should have folded hands according to his *sādhana* (*sampuṭakṛitāñjali-pūrvakas=tishṭhet*). The roll-like object may be the book which he should, according to the same text, carry about his waist (*pustakakakshanikshiptaḥ*). There is seen a figure of only one Dhyāni-Buddha on the back slab. How many Dhyāni-Buddhas were originally depicted besides this cannot be ascertained, since a large portion of the back slab has broken off from the right hand side. The sculpture was found at Deul near Tālanda in the District of Rajshahi.

A(*b*) 11 : 89.—This is similar to the above but is in very much damaged condition. Both hands of the figure are gone. There are, however, marks on the breast showing that the hands were placed very close to it and therefore, probably exhibited the Dharmachakramudrā. Traces of the book are visible on the lotus. The head of the lion is on the left, and not on the right side of the main figure as in the previous sculpture. Regarding the attendant seated figure appearing on his right side, viz. Sudhanakumāra, it should be remarked that the roll-like elongated object is much more distinct in this specimen. The treatment of the attendant figure to the left of the deity is, however, more important. It does not hold a staff. Its right hand is directed towards the central figure in *karaṇa-mudrā* and the left hand is in the *tarjanī-mudrā*. If the figure represents Yamāri it would indeed be a unique form of the deity. What is more probable is that Hayagrīva is represented by this figure as the two particular poses are characteristic of him.[1] The sculpture comes from Telai in the Rajshahi District.

3. Scene of the "Monkey Offering."

There is one sculpture representing this scene among the collection of stone relics which originally belonged to the Indian Museum, Calcutta, but are now in the Rajshahi Museum as a permanent loan from the Government of India. In the *Catalogue of Archæological Relics* it is entered as No. I(*a*) 41 : 442, and described as 'one facade of a votive stūpa with Buddha in meditating attitude in a trifolio niche' (p. 35). The sculpture, however, represents Buddha seated, holding with his two hands a pot-like object on his lap, but not in the meditating attitude. On the pedestal, below the lotus seat, is seen the kneeling figure of a monkey with some offering in its hand (see Plate 9, fig. 4).

There are various traditions regarding the place of occurrence of the monkey offering, some locating it at Vaiśālī, some

[1] Cf. *Indian Buddhist Iconography*, pp. 68-69.

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at Mathurā, some at Śrāvastī and some at Kauśāmbī. The scene is frequently represented in Buddhist art and was already a favourite subject of the artist in the second century B.C. On account of diversity of tradition there was uncertainty as to where the monkey-offering, in the opinion of the Buddhists, actually took place; and scholars have accordingly adopted one tradition or the other in interpreting its representations in art. The traditions are briefly as follows :—

(1) Hiuen-Tsang, while describing his visit to Vaiśālī, refers to the Monkey Tank (*markaṭa-hrada*) and says that near the west side of the Tank "was a tope on the spot at which the monkeys took the Buddha's bowl up a tree for honey to give him; near the south bank was a tope at the place where the monkeys presented the honey." [1]

(2) Again in connection with Mathurā the pilgrim says, that there was a tope near it, on the banks of a dried-up tank, and this was the place "at which when the Buddha was once walking up and down a monkey offered him some honey. The Buddha caused the honey to be mixed with water and then distributed among his disciples. Hereupon the monkey gambolled with delight, fell into the pit (or ditch) and died, and by the religious merit of this offering was born as a human being." [2]

(3) Certain Chinese authorities relate the following story: "The Buddha and his disciples had halted for rest one day under some trees by a tank not far from Śrāvastī. Here a monkey came and took Buddha's bowl and soon after returned with it full of honey and offered it to the Buddha. The latter sent the monkey back first to remove the insects from the honey and afterwards to add water to it. When the honey was thus 'pure,' that is, fit for *bhikhshu*'s use. Buddha accepted it and distributed it among his disciples. The monkey was now again up in a tree, and seeing his honey accepted and distributed he frisked about with delight until he fell and was drowned in the pit below. But by the merit of the gift of honey he was immediately born again as a human creature." [3]

(4) The author of the *Dhammapada Commentary* tells us yet another story. Once on a time Buddha on account of a quarrel amongst his disciples retired in disgust to the Pārileyyaka forest near Kauśāmbī. There a monkey seeing that he was being waited up on by an elephant felt a desire to serve him likewise and brought to Buddha a honey-comb placed on a plantain-leaf, which he accepted.[4]

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[1] Watters, *Yuan Chuang*, Vol. II, p. 65.
[2] *Ibid.*, Vol. I, p. 309.
[3] *Ibid.*, Vol. I, p. 310.
[4] *Commentary on the Dhammapada* (ed. Norman), Vol. I, Pt. I, pp. 63–65.

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Now the question is: were all these legends represented in art? Nos. 2 and 3 of the legends locate the scene of the offering at Mathurā and at Śrāvastī respectively. They agree in one important detail, viz. that the monkey after presenting the honey disappeared in a well and re-appeared in consequence of his merit as a human being. Gupta sculptures from Sārnāth and also some later sculptures, which represent the monkey offering, have carefully depicted this part of the story. But in the *Catalogue of the Sārnāth Museum* these sculptures have been described as representing No. 4 of the aforesaid legends, which is said to have taken place in the Pārileyyaka forest near Kauśāmbī.[1] This is hardly tenable. The legend has absolutely no reference to the disappearance of the monkey in a well and his later re-appearance as a human being. Again the *Dhammapada Commentary* distinctly says that when Buddha was living in the Pārileyyaka forest he was waited upon by an elephant and later on by a monkey who brought him a honey-comb placed on a plantain-leaf. A sculpture in the Ānanda temple at Pagan[2] closely depicts all these details, viz. the elephant, a honey-comb placed on a leaf and so on, and has been rightly identified as a representation of the Pārileyyaka legend. The absence of these elements from the Sārnāth sculptures does not, therefore, justify us in identifying them as depicting the Pārileyyaka legend. As the Pagan specimen was certainly based on Indian originals it is clear that the story of the Pārileyyaka forest was similarly treated in Indian art. But the story itself seems to have been a later invention. An account of Buddha's dwelling in the Pārileyyaka forest occurs for the first time in the Vinayapiṭaka,[3] and there is no reference there to the monkey-offering, although the elephant serving Buddha is mentioned. A monkey episode was probably considered indispensable by the later Buddhist writers in connection with Buddha's life in the jungle. Thus, in addition to the elephant, the monkey was introduced and the well-known honey-offering of the monkey which occurred, according to such early treatises as the Mahāvastu and the Divyāvadana, in Buddha's life in quite another connection, was too good not to be utilised and taken advantage of.

There remain thus in fact three legends of an early period for our consideration, and if properly analysed it will be found that they represent only three versions of the same story. The Vaiśālī legend is an account of the monkey-offering in its simplest possible form. It is the offering and nothing else. The Mathurā and Śrāvastī versions add further

[1] E.g. p. 189, c.
[2] *Arch., Surv. Rep.*, 1913-14, p. 95 and Plate XXXVII, fig. 54.
[3] Ed. Oldenberg, Vol. I, pp. 352-53.

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details to it and introduce also the fruit or consequence of the offering, viz. the immediate rebirth of the monkey as a human being. This sudden consequence of the merit of offering had to be explained, and it could only have been done by allowing the monkey to commit suicide in a well immediately after the offering and thereby to put an end forthwith to his monkey existence. That the three stories are but parts of one and the same and, therefore, must have been originally associated with the same locality, will appear probable if we concede that when the original story was forgotten attempts were made to connect it with one sacred place or another, such as Mathurā and Śrāvastī.

About the present sculpture one thing more remains to be noticed. It shows a bunch of mangoes with leaves, hanging above the head of Buddha. This cannot but be taken to indicate that he is represented as seated here under a mango tree. And where could this possibly have been if not at Vaiśālī, where one of his most favourite resorts was the mango-grove presented to him by a lady named Āmbapālī ? The story of the gift is related in the Mahāvagga,[1] the Mahāparinibbānasuttanta[2], and also by Fa-hien.[3] The representation of Buddha seated under a mango tree and receiving the honey-offering from a monkey clearly shows that the artist locates the scene at the grove of Āmbapālī at Vaiśālī. A miniature representation of the scene contained in a MS. of the Pāla period from Nepal has been published by M. Foucher.[4] Here also Buddha is shown as seated under a tree, although it is not very clear whether this is really a mango tree. That it is a fruit tree there is no doubt, because a fruit is represented as hanging from it. The monkey is seen ascending the tree behind the back of Buddha, frolicking in front of him, and finally disappearing in a pit at the right hand corner of the miniature. If the tree is a mango tree, which I daresay it is, then we have in this representation an interesting combination of all the three legends relating to the offering of honey by a monkey at Vaiśāii as well as the immediate consequence of its merit.

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[1] Ibid., Vol. I, pp. 231–33.

[2] Rhys Davids, *Sacred Books of the Buddhists*, Vol. II, Part II, pp. 101-5.

[3] Legge, *Travels of Fa-hien*, pp. 72-73

[4] *Icon. Bouddh.*, Part I, Pl. X, fig. 4 and Part II, p. 114.

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FIG. 2.—Ratnasambhava.

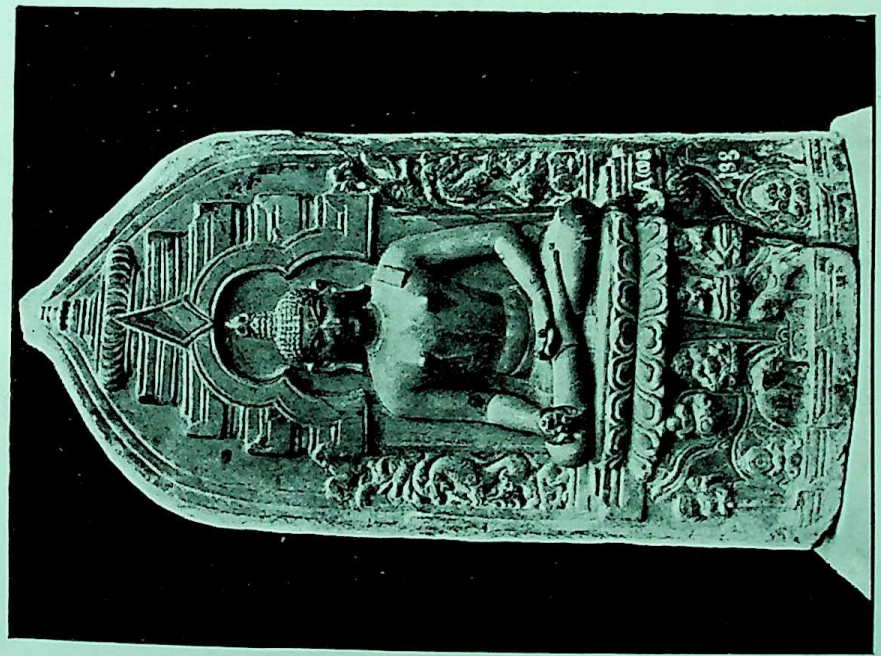

FIG. 1.—Ratnasambhava.

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FIG. 4.—Scene of the Monkey offering at Vaiśālī.

FIG. 3.—Mañjuvara.

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Investigations regarding an Epidemic of Fish Mortality in the Tank in the Indian Museum Compound.

By R. B. SEYMOUR SEWELL, M.A., F.Z.S., F.L.S., F.A.S.B., MAJOR, I.M.S., *Director, Zoological Survey of India.*

Throughout Bengal cases of sudden and widespread mortality among fish living in tanks[1] appear to be of comparatively common occurrence and the resulting loss is of very considerable economic importance throughout the province. When such an epidemic occurred in the tank in the Indian Museum, it seemed to me to be advisable to investigate this occurrence so far as was possible, with a view to ascertaining its causation. In order to obtain information regarding similar epidemics in other tanks a letter was published in the *Statesman* on the 24th February, 1926, requesting that detailed information regarding similar epidemics might be sent to me by people who had previous experience of such a calamity. This elicited only three replies. The first of these, published in the *Statesman* of March 1, 1926, refers to a tank in Kidderpore, Calcutta, where a similar epidemic is stated to have occurred some years ago. Unfortunately no details are given regarding the time of year at which the epidemic took place and the epidemic itself, it is suggested, was due to the introduction in bulk of a vegetable poison called *Lankasera.* If this suggestion is correct, then this epidemic has no relation to the one in the Indian Museum tank since the chemical analysis of the water in this latter case showed that no poison was present. Mrs. Price, of Fort C.T.S., Nathnagar, E.I.R. (Loop), Bihar, kindly supplied me with details of a somewhat similar occurrence in certain tanks in Orissa. In the case of these latter tanks it is stated that in one case the tank was overgrown with weeds, the surface being covered with water-hyacinth and pond lilies. The second smaller tank, however, was apparently free from weeds. The symptoms exhibited by the fish in this case appear to have been very similar to those of the fish in the Museum tank and were probably due likewise to partial asphyxia. The third reply came from Dr. B. Misro Mahasayo, M.B., B.S., Health Officer, Cocanada Municipality. He informs me that on the 19th February, 1926, that is to say two days after the occurrence of the mortality in the Indian Museum tank, a similar high mortality

[1] In this country the word 'tank' is used for any artificial pond or small lake.

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occurred in the local Municipal impounding reservoir tank at Cocanada. In this case, he informs me that the fish that were affected were 'Rohu.' The tank is said to have 6 ft. of water with a considerable growth of moss and vegetation at the bottom. Dr. Ekendranath Ghosh, Professor of Biology, Medical College, Calcutta, has also informed me that he has lost many fish by a similar epidemic in his tank. In spite of the paucity of these replies to my enquiry it appears that epidemics, either identical or of a very similar nature to that in the Indian Museum tank, are by no means rare and, moreover, that the loss of fish from this or similar causes must constitute a very considerable economic loss.

Mr. K. Biswas informs me that there is in Bengal a so-called disease, known to the Bengali fishermen by the name "Aosa," that is supposed to be caused by mud-poisoning due to a sudden rise of temperature. So far as I can discover this so-called "disease" has never been investigated and its causation is unknown, though Mr. Biswas in a letter suggests that the mortality may be due to :—

(i) large accumulation of rotting debris of animal and vegetable matter and consequent large development of putrefaction bacteria ;

(ii) mud containing organic debris accumulating in large quantities at the bottom of tanks and so causing a prolific growth of putrefactive bacteria ; or

(iii) to the sudden influx into tanks of muddy water causing difficulty in respiration.

As I have mentioned below, the tank in the Museum compound was, prior to the epidemic, remarkably free from weeds and floating debris and although there probably is a large amount of organic matter in the mud of the bottom, this does not seem a sufficient cause *per se* for the sudden death of such a large proportion of the fauna.

In the following paper I have given all the information that I have been able to obtain regarding the epidemic and the changes in the water of the tank that appear to have given rise to it, and I take this opportunity of placing on record my sincere thanks to all those, who so kindly assisted me in the investigation :—

I. General Condition of the Tank.

The tank in question is a large one, measuring 324 ft. in length by 236 ft. in breadth : it is roughly rectangular in shape, though the northern boundary is somewhat irregular. So far as is known there is no outlet nor are there any springs in the tank, and the water level is maintained by sub-soil water, the level of which in Calcutta lies about 5 feet below the surface. The banks drop steeply downward to the margin and are mostly

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covered with flower-beds and bushes, and in places the water is overshadowed by trees (*vide* the photograph of the tank, Plate 10). The depth of water increases rapidly as one passes out from the margin and in the centre it is stated to be some 20 feet. At the time of the epidemic the tank was comparatively free from weed. The amount of weed varies very considerably from season to season and year to year, but as a rule it does not appear in any large quantity till the hot weather or the S.W. monsoon period and, when present in any large amount, consists for the most part of rootless floating weeds; round the margin there are in places small patches of water lilies. A certain quantity of dead leaves from the overhanging trees and bushes are usually present in the water, but on the whole the water is clear and free from decomposing vegetation. The tank from time to time in past years has been stocked and restocked with fish, the last introduction of "fry" having been carried out in August, 1925. Annandale[1] remarks regarding the Calcutta tanks—"The best of the tanks from the sponge-collector's point of view, so far as I have been able to discover, is the one in the compound of the Indian Museum. It enjoys all the advantages of light and shade, solid supports, prolific aquatic vegetation, considerable depth, and the vicinity of human dwellings that seem to be favourable to the growth of sponges, no less than nine species of which, representing three genera and two subgenera, grow abundantly in it. Hydra also flourishes in this pond, but for some reasons there are no polyzoa." Although, with the exception of the freshwater sponges, no systematic investigation of the fauna of the tank has ever been carried out, from time to time observations have been made and the occurrence of various organisms have been recorded. Below, I give a list of such records as I have been able to find.

PORIFERA.[2]

Genus *Spongilla*.

Spongilla (*Euspongilla*) *alba* Carter.
,, (*Eunapius*) *carteri* Carter.
,, ,, *crassissima* Annandale.
,, ,, *fragilis* Leidy, sub sp. *decipiens* Weber.
,, ,, *fragilis* Leidy, sub sp. *calcuttana* Annandale.

---

[1] Annandale, "Fauna of British India: Freshwater Sponges, Hydrozoa and Polyzoa," p. 13.

[2] In compiling the following list I have been assisted by my colleagues in the Z.S.I., Dr. Srinavasa Rao, who has supplied me with a list of the Mollusca, Dr. S. L. Hora, who has given me a list of the fish and Mr. Rebeiro, who has compiled the list of Insecta.

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Genus *Trochospongilla.*
Trochospongilla latouchiana Annandale.
,, *phillottiana* Annandale.
Genus *Ephydatia.*
Ephydatia meyeni (Carter).
,, *crateriformis* (Potts).

COELENTERATA.
Hydra vulgaris phase *orientalis* Annandale.

VERMES.
Nais paraguayensis Michaelsen.
Aeolosoma bengalensis Stephenson.

MOLLUSCA.
Prosobranchia.
Fam. Hydrobiidae.
Amnicola (*Alocinma*) *orcula* (Frauenfeld).
Digoniostoma cerameopoma (Benson).
Fam. Viviparidae.
Vivipara bengalensis (Lamarck).
Fam. Ampullariidae.
Pila globosa (Swainson).
Fam. Melaniidae.
Melanoides tuberculatus (Muller).
Melanoides lineata (Gray).
Acrostoma variabilis (Benson).

Pulmonata.
Fam. Limnaeidae.
Limnaea acuminata f. *gracilior* Martens.
Limnaea luteola f. *ovalis* Gray.
Fam. Planorbidae.
Indoplanorbis exustus (Deshayes).
Gyraulus convexiusculus (Hutton).
Gyraulus euphraticus Mousson.

Lamellibranchia.
Fam. Unionidae.
Lamellidens marginalis (Lamarck).
Fam. Cyrenidae.
Pisidium clarkeanum G. & H. Nevill.

CRUSTACEA.
Cladocera
Simosa elizabethae King.
Scapholeberis kingi Sars.
Ceriodaphnia rigaudi Richard.
Dunhevedia crassa King.
Chydorus globosus Band. var. *sculptus* Gurney.
Macrothrix goeldi Richard.

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Copepoda.
Cyclops fimbriatus Fischer.
,, *leuckarti* Claus-*Mesocyclops obsoletus* (Koch).
,, *prasinus* Fischer.
,, *phaleratus* Koch.
Diaptomus cinctus Gurney.
,, *contortus* Gurney.
Macrura.
Palaemon (*Eupalaemon*) *lamarrei* H.M. Edw.

INSECTA.
Aptera.
Collembola.
Entomobryinae.
Pseudosira indra Imms.
Neuroptera.
Hemerobiidae.
Sisyra indica Ndm.
Odonata.
Ischnura senegalensis (Ramb.).
Ephemeroptera.
Cloëon sp.
Coleoptera.
Adephaga.
Dytiscidae.
Canthydrus laetabilis Wlk
Polymorpha.
Parnidae.
Potaminus (*Helichus*) *parallelus* Grouv.
Malacodermata.
Malacodermidae.
An aquatic glow-worm larva ? *Luciola vespertina.*
Rhynchophora.
Curculionidae.
An aquatic weevil.
Diptera.
Orthorhapha Nemocera.
Chironomidae.
Polypedilum fasciatipennis (Kieff.).
Culicidae.
Anopheles funestus var. *listoni* Liston.
,, *fuliginosus* Giles.
,, *subpictus* Grassi.
Culex barbirostris v.d. Wulp.
,, *fatigans* Wied.
,, *tritaeniorhynchus* Giles.
,, *vagus* Don.

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Rhynchota.
(Heteroptera).
Gymnocerata.
Hydrometridae.
Gerris fossarum (Fabr.).
Hydrometra vittata Stal.
Mesovelia mulsanti Buc. White.

Cryptocerata.
Nepidae.
Laccotrephes tristis Stål.
Naucoridae
Naucoris sordidus Dist.
Thurselinus clathratus Dist.

Belostomatidae.
Sphaerodema annulatum Fabr.
Notonectidae.
Helotrephes indicus Dist.
Plea metiadusa Dist.
,, *pallescens* Dist.

Corixidae.
Micronecta issa Dist.

Fish.	*Vernacular name.*
Family Siluridae.	Cat-fishes.
**Saccobranchus fossilis* (Bloch)	*Singhee.*
**Macrones vittatus* (Bloch)	*Tengra.*
Family Cyprinidae.	Carps.
Labeo calbasu (Ham. Buch.)	*Calbasu.*
Labeo rohita (Ham. Buch.)	*Rohu.*
Labeo bata (Ham. Buch.)	*Bata.*
Cirrhina mrigala (Ham. Buch.)	*Mirgal.*
Catla catla (Ham. Buch.)	*Catla.*
**Barbus sp.* (several species of small barbels such as *B. stigma*)	*Pottiah.*
**Chela phulo* (Ham. Buch.)	*Chela.*
Family Clupeidae.	Herrings.
**Clupea chapra* (Ham. Buch.)	*Khaira.*
Family Notopteridae.	
Notopterus notopterus (Pallas)	*Pholoe.*
Family Cyprinodontidae.	
Panchax panchax (Ham. Buch.)	*Techoko.*
Family Percidae.	Perches.
Ambassis nama (Ham. Buch.)	*Katchanda.*
Family Gobiidae.	Gobies.
Glossogobius giuris (Ham. Buch.)	*Bele.*
Family Rhynchobdellidae.	Spiny-eels.
**Mastacembelus armatus* (Lacep.)	*Bamee.*
Family Ophiocephalidae.	Snake-headed fishes.
**Ophiocephalus punctatus* (Bloch)	*Lata.*

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Family Labyrinthici. Air-breathing perches.
**Trichogaster fasciatus* (Bl. & Schn.) *Khalshee.*

For convenience of reference the classification of Day has been followed in drawing up this list of fishes.

AMPHIBIA.

Bufo melanostictus Schneid. (tadpole stage).
**Rana tigrina* Daud.
**Rana limnocharis* Wiegm.

REPTILIA.

**Tropidonotus piscator* Russell.

Specimens of the species whose names are marked with an asterisk (*) have not been examined, but they are said to occur in the tank.

In addition to the organisms enumerated above, an examination of the water on the day of the epidemic revealed the presence of a large number of Infusorians, several *Rotifers*, among which latter I have been able to identify *Anuraea valga*, Ehr. var. *tropica* Apstein, previously recorded from Ceylon, and a species of *Ceratium*, *C. kumaonense* Carter. The occurrence of this "species" of *Ceratium* in large numbers in a tank in Calcutta appears to be worth putting on record. It was first described by Carter[1] from the lake of Naini Tal. Mr. Stewart Clark, Inspector-General of Prisons, N.W.P., who collected the original specimens, noted that they occurred only in the upper 20 feet of water and that they turned the blue colour of the lake to a rusty brown. Carter remarks that a species of *Ceratium*, which he believed to be a variety of *C. kumaonese*, but which closely resembled examples of *C. longicorne* Perty, were obtained by Major Stuart Wortley from the freshwater pools of Calcutta. Annandale and Kemp[2] have also recorded the occurrence of these two forms, *C. longicorne* Perty and *C. kumaonense* Carter, from many of the Kumaon lakes at heights ranging from 3,600 to 6,400 feet above sea level and have suggested that they may be phases of one single species. Jorgensen[3] includes both *C. kumaonense* and *C. longicorne* as synonyms of *C. hirudinella* (O. F. Müller) Bergh. If this be so, then the occurrence of *C. kumaonense* in Calcutta is not so surprising, since *C. longicorne* has already been recorded from this locality.

---

[1] *Ann. Mag. Nat. Hist.* (4) vol. VII, p. 229. "Note on a freshwater species of *Ceratium* from the lake of Nynee (Naini) Tal in Kumaon."

[2] "Observations on the Invertebrate fauna of the Kumaon Lakes with special reference to the Sponges and Polyzoa." *Rec. Ind. Mus.*, vol. VII, p. 129, 1912.

[3] "Die Ceratien, Eine kurze Monographie der Gattung Ceratium Schrank." *Internat. Rev. Geo. Hydrobio. und Hydrograph. Biol.* Suppl. II Serie, vol. iv, 1911.

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II. The Epidemic.

The first sign that anything was amiss in the tank in the Indian Museum was noticed by Mr. Percy Brown, Principal of the Government School of Art, who resides in the Museum precincts, on the evening of the 16th February, 1926. According to his account, during the course of that evening the water of the tank appeared to the "aerated," and presumably this appearance was due to an ebullition of gas. He remarked that simultaneously he detected a smell of rank vegetation so that it is possible that the gas evolved contained a certain proportion of methane or marsh gas (CH_4). At this time the fish in the tank appeared to be uneasy and were noticed to be swimming round and round the tank. At 6 a.m. on the following morning, February 17th, 1926, it was found that the fish in the tank were exhibiting signs of acute distress. Many of them were swimming slowly on the surface with their mouths out of water and were gasping for air, and a large percentage were actually dying. The water of the tank was of a reddish-yellow tint, but it is impossible to be absolutely certain as to the causation of this colouration, for when I reached the scene numerous menials, domestic servants, etc., were congregated round the edge of the tank and some were swimming about collecting the fish as they came up to the surface. As a result of this activity a very considerable amount of mud was being stirred up round the margin and this may to a large extent have caused the discolouration. It is more probable, however, that the colour of the water was due to the presence of the dinoflagellate, *Ceratium kumaonense* Carter, which subsequent examination of a water-sample showed to be present in enormous numbers (*vide infra*, p. 196). The fish that were most affected belonged for the most part to the carp tribe and included Rohu, Calbasu and Catla, but the epidemic was by no means limited to these nor was it limited to fish of any one size. Large specimens of *Labeo calbasu* or *L. rohita* of approximately 40 lbs. in weight were just as much affected as the smaller fish and *vice versa*. Whatever was its cause, the epidemic appears to have equally affected all the inhabitants of the tank. It was noticed that the majority of the inhabitants of the tank had to a large extent migrated from the deeper water into the shallow water round the margin. The prawns and small fish, mostly *Glossogobius giuris*, were congregated in large numbers round the edge of the tank and many of these died during the next day or two. The molluscs also were to some extent affected, though in this case the effect does not appear to have been quite so fatal; but this apparent partial immunity was probably due to the fact that in most cases the dead molluscs would sink to the bottom, being weighed down by the weight of their shell. The species of larger molluscs that are present in large numbers in the tank at this

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period of the year are *Vivipara bengalensis*, *Acrostoma variabilis*, *Melanoides lineata* and *Melanoides tuberculatus*. All of these appeared to be equally affected and they, like the prawns, exhibited a marked migration into shallow water round the margin of the tank.

By the afternoon of the 17th February, 1926, the epidemic appeared to have ceased. A few fish were seen rising to the surface in a perfectly normal manner and there was no exhibition of the distressing air-hunger that had been such a marked feature of the morning's occurrence. The tank margin was now crowded with molluscs, especially *Vivipara bengalensis*, *Acrostoma variabilis* and *Melanoides lineata*, and numerous prawns and small examples of *Glossogobius giuris* were found dead round the margin.

An inspection of the tank on the 19th morning showed that the condition was still very similar. The margin of the tank was still crowded with molluscs and numerous small fish and prawns. A few small dead fish were noticed floating in the tank, the water of which was beginning to smell very badly.

By the evening of the 21st conditions had more or less returned to the normal. The small fish and prawns had by this time retreated from the margin of the tank and the molluscs were in the process of so doing; there were far fewer round the margin in the shallow water than there had been on the 19th. A few dead examples of *Vivipara bengalensis* were seen floating on the surface of the tank and it would appear, therefore, that the mortality, which, as we have already noticed, affected both the fish and the prawns, had also extended to the molluscs, and possibly it was more extensive in this group than at first sight appeared to be the case, since it would only be species such as *V. bengalensis* with a comparatively light shell, that would float when the body was undergoing decomposition; such species as *A. variabilis* and *M. lineata*, in which the shell is thick and heavy, would naturally sink to the bottom and it seems probable that these latter species were equally affected along with *V. bengalensis*, although their dead remains were not in evidence.

By the morning of the 23rd the condition in the tank had become perfectly normal. Whatever the cause of the epidemic may have been, it seems clear then that it was of a transitory nature and was only in operation for a comparatively short time, the maximum effect being reached on the morning of the 17th.

III. Post-Mortem Examination of the Fish.

By the time I was able to reach the scene many of the dead and dying fish had been secured and removed by the menials, servants, etc., and it is therefore impossible to give any data

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regarding the total mortality. I was able, however, to secure a number of examples of several species of fish and a few prawns and in every case the post-mortem conditions appear to have been identical. The external appearance of the fish was perfectly healthy. A post-mortem examination of the internal organs showed that the auricle of the heart was greatly distended with blood and the veins in the body were engorged. The general condition of the viscera, taken in conjunction with the symptoms exhibited by the fish, indicated that death was primarily due to asphyxia either from insufficient oxygen or from excess of carbon dioxide in the water of the tank. It was noticed that the gills of both the fish and the prawns were infected by Protozoa and examples were sent for examination to Dr. P. Bruhl, Professor of Botany in the Calcutta University, and Dr. Ekendranath Ghosh, Professor of Biology, Medical College, Calcutta. Dr. Ghosh reports that the organisms present on the gills of the prawns and in the gill chambers of the fish were Dinoflagellates belonging to the genus *Prorocentrus*. "They do not seem to have any deleterious effect on the animals in question." Dr. Bruhl informs me that he has "not found a large number of algae in the gills, but a few diatoms and solitary filaments of very narrow *Oscillatoria* which are not likely to cause difficulty in the respiration of the fishes." A bacteriological examination of the contents of the lower gut carried out in the School of Tropical Medicine, Calcutta, showed the presence of *B. pyocyaneus* and *B. coli communior*. Mr. Biswas, who also examined examples of the dead fish, remarks "I personally observed it is not algae or flagellata which are choking up the gills. But I kept a minute part of the gills of the samples of dead fishes of the Museum tank sent to me by Dr. Hora, in a petri-dish and I found within 12 hours a thick cloudy film of bacteria accumulating on the surface. When I examined the fish as soon as they were sent to me I found also the same type of bacteria as I found to grow in the petri-dish culture." Unfortunately the observations, made by Mr. Biswas, interesting though they are, throw no light on the cause of death, since no precautions were taken to prevent contamination of the fish in the interval between their death and their subsequent examination in the laboratory at Ballygunge. A microscopic examination of the gills of both fish and prawns, within a few minutes of their removal from the tank, in the laboratory of the Zoological Survey of India in the Indian Museum showed no trace of any condition that could be attributed to a prolific growth of bacteria. Putrefactive bacteria are always present in any such collection of water as the Museum tank and they were doubtless largely responsible for the "Colonies innumerable" recorded by the analyst of the Health Department of the Corporation of Calcutta (*vide infra*, p. 188), in his report on samples of the water,

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and they would also be present on the gills of any fish living in the tank. The presence of such putrefactive bacteria is, of course, essential for the maintenance of life in a tank.

IV. General Conditions of the Water in the Tank on the Day of the Epidemic.

Samples of water were taken on the morning of the 17th February, when the fish mortality was at its maximum, and were submitted to Dr. W. A. K. Christie, of the Geological Survey of India, who very kindly carried out a gas analysis. He reports as follows :—

"The water was boiled under reduced pressure until no more gas was evolved.

Reckoning volumes at 0°C. and 760 mm., 1 liter of water contained a total of 25·3 c.c.m. of gas Of this volume 8·3 c.c.m. consists of carbon dioxide and 3·2 c.c.m. of oxygen. The remainder, 13·8 c c.m., is mainly nitrogen. The sample of water sent was divided into two parts, in one of which it was proposed to determine the total salts in solution. Owing to an accident in the determination of the gases, the second part was used in their determination and was not subsequently available for the estimation of the salts. As the salinity of the water is presumably not subject to sudden fluctuations its determination is perhaps not so important in the investigation of the cause of the epidemic."

Lt.-Col. Acton, I.M.S., and Major Chopra, I.M.S., of the Calcutta School of Tropical Medicine, kindly carried out an examination of the Hydrogen-ion concentration. The result of their examination showed that the pH content of the water lay between 6·5 and 7, which may be considered to be normal. So far as I am aware, very little investigation has been carried out with regard to the Hydrogen-ion concentration of the natural waters of this country: R. Senior White,[1] in the case of a tank in Ceylon, found that the pH fell slowly from 6·8 to 6·4 from March to May. Therefrom up to the end of October, it remained at the lower value, with brief fluctuations upwards coinciding with periods of heavy rain, until the onset of the North-East Monsoon raised it to 6·5, which after the heavy January rains rose to 6·6. On the day of the epidemic, but later in the day and after the cause of the mortality had apparently disappeared, the Health Officer to the Corporation of Calcutta sent one of his analysts who took two samples of the water. The result of his analysis is as follows :—

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[1] "Physical Factors in Mosquito Ecology"; *Bull. Entomol. Research* Vol. XVI, pt. 3, p. 236, 1926

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Chemical—

Free and Salaine ammonia	.. 0·016	parts per 100,000
Albuminoid ammonia	.. 0·12	,, ,, ,,
Chlorine ..	.. 3·4	,, ,, ,,

Bacteriological—

B. Coli positive in 0·1 c.c.
Cholera Vibrio absent.
Colonies innumerable.

This report indicates that a certain amount of "fouling" of the water was taking place owing to the insanitary habits of the menials who are housed or employed in the neighbourhood of the tank, but probably the degree of fouling is not more than, if as much as, that which occurs in any tank in Calcutta, and is probably less than that in most tanks in the mofussil. Finally, samples of the water were examined by the Chemical Examiner to the Government of Bengal, who reports that "no poison has been detected in the sample of water."

V. The Causation of the Epidemic.

It is possible that there was more than one causative agent in this epidemic. As Annandale[1] points out, in an English pond or lake there is every autumn a crisis that results in the death of a large proportion of the fauna. "In an Indian pond or lake a similar crisis takes place in the case of most species, but it does not take place at the same time of year in the case of all species." He also points out[2] that "The great majority of the organisms found in ponds in lower Bengal appear to be adversely affected by heat and, as it were, imperfectly acclimatized." In many cases there appears to be an annual mortality of the freshwater fauna in India at or near the height of the hot weather. This has been particulary noticed in the case of several species of freshwater sponges, in which the tank in the Indian Museum is peculiarly fertile, and in certain Polyzoa in other tanks. I have previously shown[3] that in the case of the mollusc population in "permanent" waters in India there is annually a very heavy mortality that commences in January and reaches its maximum in July. In view of the wide distribution and the persistent occurrence throughout Bengal of many of the organisms that constitute the tank fauna, one can, I think, hardly be justified in concluding that they are "imperfectly acclimatized." It seems much more probable that there are at certain times of the year changes in the gene-

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[1] *Loc. Cit.*, p. 13.
[2] Annandale, *Rec. Ind. Mus.*, Vol. I, p. 387.
[3] Sewell, *Ind. Journ. Med. Research*, Vol. X, Chart III, 1922.

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ral physical conditions of the water of such tanks that are harmful to life and so cause the death of many of the inhabitants. Such evidence as we possess tends to show that the period of the hot weather is usually unfavourable to the pond fauna of India and, therefore, at such a time of year an increase in any particular unfavourable condition will be more effective than at other seasons.

It must not be overlooked that in a tank that has been stocked with fish-fry, there is a very marked tendency, as the fry grow, for the tank to become overstocked. The amount of animal population that such a circumscribed area of water can support lies within somewhat narrow limits, a more or less fixed quantity that can be measured in terms of bulk or total weight. Thus a pond may be able to support twelve large fish of a average weight of 20 lbs. or twice this number of smaller fish of some 10 lbs. weight. In consequence as the fish-fry increase in size there must eventually be a reduction in the numbers present and it is possible that in the present instance the tank had become overstocked. But that some other agent must have been at work is, I think, clearly indicated by the suddenness and the extent of the mortality and by the fact that all the inhabitants of the tank, both vertebrate and invertebrate, were affected equally, crustacea and mollusca as well as fish. The result of the examination of the water by the Chemical Examiner to the Government of Bengal shows that the mortality was not due to the introduction, either deliberate or accidental, of any poison and it appears from the data given above that the change in the water was confined to its gaseous content. The cause of this change can, I think, be attributed to the peculiar meteorological conditions that were prevailing in Calcutta for some days previous to the occurrence. In Table 1, on page 190, I have given the data, as recorded at Alipore or by the Indian Association for the Cultivation of Science on the dates noted:—

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Table 1.

Giving the meteorological conditions prevailing over Calcutta from February 9th to 20th, 1926.

Date.	Readings taken at 8 A.M.						Readings taken at 4 P.M.	
	Maximum air temperature.	Variation from normal.	Minimum air temperature.	Variation from normal.	Humidity of Atmosphere.	Variation from normal.	Velocity of wind (miles per hour).	Direction of wind.
9-2-26 ..	83·8°	+3·0°	63·6°	+4·9°	84	normal	1·02	W.
10-2-26 ..	81·8°	+1·0°	55·6°	−3·1°	85	normal	0·3	N.W.
11-2-26 ..	81·7°	normal	55·6°	−4·6°	71	−13	0·45	N.W.
12-2-26 ..	82·2°	+0·5°	57·6°	−2·6°	88	+4	0·25	S.W.
13-2-26 ..	84·3°	+2·6°	60·5°	nearly normal	97	+13	0·29	Calm.
14-2-26 ..	86·4°	+4·7°	61·6°	+1·4°	94	+10	0·16	W.S.W.
15-2-26 ..	88·0°	+6·3°	64·8°	+4·6°	87	+3	0·74	S. (unsteady)
16-2-26 ..	90·9°	+8·2°	65·8°	+4·7°	61	−22	1·13	N.W.
17-2-26 ..	88·4°	+5·7°	63·4°	+2·3°	47	−36	1·06	W.
18-2-26 ..	87·2°	+4·5°	66·2°	+5·1°	90	+7	0·5	N.
19-2-26 ..	83·4°	+0·7°	57·7°	−3·4°	69	−14	1·28	Calm
20-2-26 ..	81·1°	−1·6°	56·7°	−4·4°	61	−22	0·53	S.

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It will be noticed that commencing from the 10th February, 1926, the maximum temperature begins to show a distinct rise above normal and with minor oscillations this rise continues to a maximum on the 16th, the day on which the fish mortality commenced, it then falls again to normal on the 20th. At the same time there is an equally well marked rise in the minimum temperature. On the 6th February, 1926, this is 0·9° above normal, on the 11th it had fallen 4·6° below normal and from then on it again rises, reaching 4·7° above normal on the 16th; then after an intermission on the 17th it reaches 5·1° above normal on the 18th. Throughout this period there was a complete absence of rainfall and little or no wind. Another feature of interest in the meteorological record is to be found in the degree of humidity of the atmosphere. In Table 1, columns 6 and 7, I have given the readings taken at Alipore at 8 a.m. each day. It will be seen that commencing on the 11th February there was a steady rise in the humidity till the 13th, followed by a fall that reached its lowest level on the 17th; but that from the 12th to the 15th inclusive the humidity was above normal. Such an increased humidity must have caused a diminution of the normal rate of evaporation from the surface of the water and this would tend to inhibit the normal circulation of the water, as well as permitting the surface temperature to rise to a height greater than would have been the case, if more rapid evaporation had been going on. Atkins[1] has recorded that in the still water of an English pond the upper layer of 2 cm. depth may be as much as 5°C. warmer than the water at 20 cm. depth and in the present case it was probable that the difference between the upper stratum and the deeper water was much greater than this. As a result of this high temperature of the surface layer and the absence of wind the normal circulation of water in the tank must have almost entirely ceased. Owing to the almost complete absence of any chlorophyll-bearing weeds in the tank the amount of oxygen contained in the water at the time of the fish mortality in all probability depended almost entirely on that which was absorbed from the atmosphere and in consequence of the above-mentioned stagnation of water such absorption must have been limited almost entirely to the upper superficial layers, while the deeper layers can only have been supplied by diffusion through the various strata, a process that takes place extremely slowly. Hufner[2] has given a striking example of this, for he has calculated that if the Boden Sea, which is 250 metres in depth, were to lose its supply of oxygen and acquire a fresh supply by diffusion

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[1] Atkins, W. R. G., "On the vertical Mixing of Sea-Water and its importance for the Algae Plankton." *Journ. Marine Biol. Assoc., Plymouth* N.S., vol. XIII, No. 2.

[2] *Arch. für Anat. und Physiol.* (Physiol. Abtheil.), 1897, p. 112.

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from the air, it would take over 1,000,000 years for the bottom layer to become saturated. As a result of the physiological requirements of the fauna and the decomposition of organic matter in the bottom mud the deeper levels of the tank must for some days prior to the epidemic have become steadily impoverished in oxygen and simultaneously richly impregnated with carbon dioxide. As no water samples were taken of the deeper layers of the tank it is impossible to say to what extent this process had proceeded, but a comparison of the gaseous content of the surface water with the results obtained in certain lakes and oceans indicates to how great an extent the gas content of the superficial layers had been altered. Forel [1] has given a very full account of the gaseous content of the water of the Lake of Geneva, Switzerland, and has collected together a large number of analyses made in previous years by different observers, as follows :—

Observer.	*Date.*	*Place.*	*Temperature. °C.*	*O.*	CO_2	*N.*	
Deville ..	1846	Geneva ..	8·7	8·4	8·0	18·4	ccs. per litre.
Michaud, M.L.	1854	,, (Port)	?	9·0	9·7	19·5	,,
Risler, F. / Walter, J.	1872	Nyon (Open Lake).	?	6·80	2·88	11·87	,,
							,,
Lossier ..	1877	Geneva ..	6·6	10·38	4·61	17·16	,,
..	..	(Port) ..	9·7	9·50	9·90	17·35	,,
..	..	,, ..	9·5	4·98	12·51	13·71	,,
..	..	,, ..	10·0	5·62	12·06	13·67	,,
		Average ..		7·8	8·7	15·4	
Forel ..	1880	..	9·1	6·85	2·85	14·96	,,

Pure water in contact with atmospheric air can dissolve—

	O_2.	CO_2.	*N.*
at 5°C	7·3 ccs.	0·6 ccs.	13·6 ccs. per litre.
10°C	6·5	0·5	12·2
15°C	6·0	0·5	12·0
20°C	5·7	0·3	10·7

At a temperature of 90°F. or 30°C. the oxygen content should be 5·57 ccs. per litre.

Forel's results, so far as the oxygen and CO_2 are concerned, agree very well with the gas content found by Risler and Walter in the open lake, and also very well with the theoretical content for oxygen. The average CO_2 content, 8·7, is probably due to the high percentage of CO_2 present in the water in the neighbourhood of Geneva and Geneva Port, where it ranges from 4·61 – 12·51. In the open water of the lake the observations range from 2·85 to 2·88 ccs. In the open ocean in the tropics the oxygen content of the surface water ranges from

[1] Le Leman, Monographie Limnologique, vol. II, pp. 617, 618, 1895.

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4 – 5 ccs. per litre, and this is said to be considerably less than the normal oxygen content of fresh water.[1]

Birge and Juday[2] have shown that in the inland lakes of Wisconsin the oxygen content of the water exhibits great variation at different depths, but that on the average the surface water contains approximately 6·0 ccs. % per litre, while this may slightly increase at a depth of a few inches and then again sinks in the deeper levels. As they point out, wind is an extremely important factor in maintaining the circulation of water in a lake or tank and in the absence of wind the deeper levels rapidly become impoverished in oxygen and may be depleted altogether. An oxygen content of only 3·2 ccs. per litre appears to be extremely low. Senior-White[3] as a result of observations which covered a period of 10 months on a small tank in Ceylon found, however, that the oxygen content of the water was invariably low. He writes "Oxygen has been well below saturation limits throughout. It reached its maximum coincident with the burst of the north-east monsoon early in November, but that this was not a direct rainfall effect due to the beating up of the surface by the falling drops is shown by the absence of a similar rise correlated with the heavier January fall." He does not give the actual data obtained by him, but from the chart (Fig. IV, Tank A, p. 236) that he has published it would appear that the average oxygen content of the water in each month is as follows:—

Month.	*O. content.*	*Month.*	*O. content.*
June ..	.. 2·0 mg. per ‰	November	.. 4·0 mg. per ‰
July ..	.. 2·6 ,, ,,	December	.. 3·4 ,, ,,
August	.. 2·7 ,, ,,	January	.. 3·3 ,, ,,
September	.. 3·1 ,, ,,	February	.. 5·4 ,, ,,
October	.. 3·4 ,, ,,	March	.. 5·4 ,, ,,

From the above figures it appears not unlikely that there is a seasonal variation in the oxygen content of the water, the amount of dissolved oxygen being normally at its maximum in February and March or possibly a little later. The figure 5·4 mg. per °/₀₀ in February is equivalent to 3·77 ccs. per litre, which agrees closely with that found in the Museum tank in the same month. Mr. Banerjee, of the Geological Survey of India, has very kindly carried out a further series of tests of samples taken in the month of June, when according to Senior-White's observations the oxygen content is at its lowest, and he found that the oxygen content in the Museum tank in this month was 2·9 ccs. per litre; this result gives a figure considerably lower than that for the oxygen present at the time of the epidemic but higher than in the Ceylon tank at the same time

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[1] Murray & Hjort, "The Depths of the Ocean" p. 255.

[2] Inland Lakes of Wisconsin; *Wisconsin Geol. Nat. Hist. Surv. Bull.*, XXII, 1911.

[3] *Bull. Entom. Research*, vol. XVI, 1926.

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of year, which was only 1·4 ccs. per litre, so that if the two areas exhibit the same seasonal variation the figure 3·2 for February would be considerably below the normal for the Museum tank.

D. H. Thompson[1] has pointed out that a deficiency of oxygen in the water of the Illinois River results in a heavy mortality of the fauna—"large numbers of minnows, large mouth black bass fingerlings, crappies, sunfishes, etc., etc., died; and the carp became much distressed and swam at the surface with their heads out of the water." H. Pieron[2] has called attention to a daily rhythm in the amount of dissolved oxygen in the sea and its effect on the animal population. In the case of sea-water he found that the contained oxygen at different times of the day was as follows:—

at 9-30 a.m., April 24	O_2 3·665	mgms. per litre.
12 noon ..	.. 7·553	,,
2 p.m. ..	.. 9·671	,,
4 p.m. ..	.. 9·886	,,
6-45 p.m. ..	.. 10·330	,,
		Sunset 7-3 p.m.
8-15 p.m. ..	.. 9·441	
9-15 p.m. ..	.. 8·997	
		Sunrise 4-53 a.m.
7-10 a.m., April 25	.. 5·0	
9-30 a.m. ..	.. 7·664	

and a similar phenomenon has been recorded in areas of fresh water in England. This diurnal variation is due largely, if not entirely, to the presence in the water of chlorophyll-bearing algae. Assuming, therefore, that this phenomenon of variation in the oxygen was present in the tank, the oxygen content of the water must have been sinking since 6 p.m. on the 16th and would have reached its lowest limit just before sunrise, at 6-30 a.m., on February 17th which coincides exactly with the maximum mortality of the fauna. It is possible, if Mr. Percy Brown is right in his observation that there was a smell of rotting vegetation and if this was due to the formation of marsh gas in the deeper levels of the tank, that these two changes, the reduction of oxygen and the excessive amount of CO_2 were both due, at least in part, to the oxidation of the marsh gas into carbon dioxide and water; as Forel[3] has pointed

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[1] Some Observations on the Oxygen Requirements of the Fishes in the Illinois River; *Bull. Illinois State Nat. Hist. Surv.* XX, 1925, p. 430.

[2] de l'influence de l'oxygene dissous sur le comportement des invertebres marins. III. Des rythmes engendres par une variation periodique de la teneur en oxygene. *Comptes rendus hebdomadaires des séances de la Soc. de Biologie*, vol. LXIV—1908, No. 20.

[3] Le Leman, vol. II, p. 625, 1895.

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out in his description of the Lake of Geneva, "La matiere organique morte en se putrefiant, produit de l'acide carbonique et du gaz des marais (methane); ce dernier est oxydé et produit de l'acide carbonique" and, in a footnote, "Toujours est-il que ce gaz qui est certainement produit en grande abondance dans le sol du lac, disparait et qu'on n'en trouve plus de trace dans les analyses des eaux du Leman."

The CO_2 content of the surface water was 8·3 ccs. per litre which is about equal to the average quantity present in the surface water of the Lake of Geneva as given by authors prior to 1880, but is considerably higher than the result obtained by Forel in 1880 who found only 2·85 ccs. Mr. A. K. Banerjee found as a result of his analysis in June that the amount of free CO_2 present in the surface water in this latter month was 3·49 milligrams or 1·77 ccs. per litre It is clear, therefore, that at the time of the fish mortality there was a very large increase in the amount of CO_2 present in the surface water of the tank. M. M. Wells (1918, p. 557) remarks in a paper entitled "The reaction and resistance of fishes to carbon dioxide and carbon monoxide," that "at a concentration of 10 ccs. per litre, carbon dioxide will quickly prove fatal to the more sensitive fishes and it is doubtful if there are any freshwater fishes that could continue to live in water where the carbon dioxide content averaged as high as 6 cc. per litre throughout the year." The amount of CO_2 in solution in such an area of water as the Indian Museum tank is considerably less at or near the surface than at some depth below, since the CO_2 in solution is rapidly given off to the atmosphere, and hence, with a percentage of 8·3 at the surface, the percentage present in the deeper layers of the tank must at the very least have been very near to the lethal concentration of 10 cc. per litre. A high temperature such as that encountered during and just preceding the mortality of the fish in the Indian Museum tank will cause an increased rate of metabolism in the various animals living in the water and will at the same time cause a fall in the oxygen content and in an area of water in which the CO_2 concentration is high, these two factors combined will materially assist in producing a state of affairs in which life becomes impossible, even though the amount of CO_2 dissolved in the water will also be somewhat diminished.

A sample of water taken from the tank on the morning of the 17th February, 1926, at the time when the mortality was at its highest, was noticed to be cloudy and of a pale yellow colour. On centrifuging a sample and examining the resulting sediment the water was found to contain numerous ciliate Infusorians and *Rotifers*, etc., but its most marked feature was the very large number of a species of *Ceratium*, *C. kumaonense* Carter, of a yellow-green colour. These were present in relatively enormous numbers, the examination of several

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samples showing that on the average 2,100 individuals were present in every cubic centimetre. An examination of a further sample taken on the 19th February at 9 a.m. showed that the *Ceratium* was not only still present but was even more abundant than two days previously, the average of a series of estimations showing that now 2,400 individuals were present in each cc. of water. By the morning of the 22nd however, this species has almost completely disappeared, only 23 individuals being present in a cc. Since *Ceratium* is a chlorophyll-bearing animal and, therefore, is able to synthesise the carbon dioxide present in the water it seems clear that the sudden rise in number of this particular species may be attributed to the proportionately large amount of carbon dioxide present, namely 8·3 ccs. per litre as shown by Dr. Christie's analysis. During daylight the chlorophyll of these animals will be producing oxygen and so the total amount of this gas dissolved in the water will tend to increase from sunrise to the afternoon and thereafter, when the sun sets, will diminish. That they were not in any way responsible for the mortality itself seems to be clear from the fact that the maximum condensation of this Dinoflagellate was reached two days after the occurrence of the mortality in the fish, at a time when the epidemic had completely ceased and when conditions, so far at least as the larger individuals of the fauna of the tank were concerned, had again become normal.

VI. General Effect of the Mortality.

The first effect of a mortality such as this in the population of a tank, when the abnormal changes that caused the mortality have disappeared and conditions have again become normal, will naturally be to render the general conditions more favourable for the survivors, in as much as the total food-supply per head of the population will naturally be much greater. At the same time it will be the more hardy individuals that will have survived, the less hardy ones having fallen victims to the unfavourable conditions. On the other hand the mortality among the fish is, for the most part, confined to the members of the carp tribe, since these are only able to obtain the oxygen necessary for the maintenance of life from that which is dissolved in the water, while such species as *Ophiocephalus*, in which, owing to modifications in the gills and gill chambers, the individual is able to obtain at least a portion of its oxygen directly from the air, will be much less affected. Among the dead fish there was not, so far as I saw, a single example of *Ophiocephalus*, though species of this genus are certainly present in the tank. This will of itself cause a very marked alteration in the character of the fish fauna. Among the survivors *Ophiocephalus* and fish of a similar carnivorous habit will now be predominant and in order to maintain life

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such fish will tend to consume all the smaller fish and fish-fry supposing such to be present in the tank and to have survived the epidemic. Among such small fish in the tanks of Bengal it is likely that there are present examples of *Haplochilus*, particularly *H. panchax*, (or as it is now termed *Panchax panchax*) which is well known to feed on mosquito larvae [1] and which, therefore, tends to prevent the development and hatching of mosquitoes in these tanks. The reduction in the number of *Haplochilus* in any tank, which must result from the predations of larger carnivorous fish, will render such a tank a suitable breeding ground for mosquitoes and this appears certainly to have occurred in the tank in the Indian Museum for during the months of March and April, that is to say the two months succeeding the epidemic, mosquitoes were found to be breeding in the tank in comparatively large numbers, a condition which has not been recorded in this particular tank for some years, since on several occasions during the past the tank has been specially stocked with *Haplochilus* in order to prevent such an occurrence.

VII. Conclusions.

The epidemic appears to have been due to a rise in the CO_2 content of the water, so that it eventually acquired a lethal character, assisted, possibly, by a reduction in the amount of free oxygen, both changes being brought about by the prevailing meteorological conditions.

As regards methods to be employed in order to prevent such occurrences in similar tanks, the obvious lines of procedure seem to be to devise some means by which the oxygen content of the water can be maintained at a high level, while the CO_2 content is prevented from rising to the lethal concentration during this period of the year.

The first method that suggests itself is to introduce from time to time such water-weeds and chlorophyll-bearing algae as under the influence of sunlight will produce oxygen and so maintain the necessary standard of oxygen in solution in the water. Mr. S. N. Bal, of the Botanical Survey of India, in consultation with Mr. K. Biswas has kindly drawn up a list of water-plants that in their opinion would be beneficial in a tank such as that in the Indian Museum and whose presence would tend towards the maintenance of a high percentage of oxygen in the water. The list is given in an appendix.[2]

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[1] *Vide* Sewell and Chaudhuri, "Indian fish of proved utility as mosquito-destroyers," p. 3, Calcutta.

[2] Since this paper was written Mr. K. Biswas has published a short paper dealing with this subject under the title. "Aquatic vegetation of Bengal in relation to supply of oxygen to the water."—*Journal Dept. Science, Calcutta University*, Vol. VIII, 1927.

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A second method would be to devise means, in the absence of wind and a sufficient temperature gradient, to create a circulation of the water in the tank and so prevent the stagnation of the water that must ensue in a period of such high temperature and absence of wind. Such a result might be attained by periodically dragging a net through the tank. Periodical netting would serve a double purpose, in as much as it would not only create a circulation of water and so help in the oxygenation of and the removal of CO_2 from the deeper levels, but also it would render it possible to remove such harmful fish as *Ophiocephalus*, which is a coarse-fleshed fish, has a market value, as a food-supply, that is very inferior to that of the vegetable-feeding carp and by its depredation on the other fish in the tank causes a diminution in number, not only of carp but of such smaller fish as *Haplochilus*, etc., whose presence in tanks is eminently desirable, since they keep down the numbers of, and may even totally eliminate, mosquito-larvae breeding in the tank and so tend to reduce the incidence of malaria. It is, furthermore, not improbable that a periodic stimulation of the fish into activity, such as would result from the process of netting, would *per se* be beneficial to the fish and tend to maintain them in a healthy condition.

A third method is to treat the water with lime (CaO). Mr. Biswas informs me that the fishermen of Bengal, in cases where a similar epidemic occurs, are in the habit of sprinkling lime around the margin of the tank. In the event of the lime being sprinkled on the water, there would be a chemical interaction between the lime and the carbon dioxide of the water, with the formation of calcium carbonate. Such a process would at once cause a diminution of the amount of carbon dioxide in the water and thus render the concentration of this gas non-lethal. It is extremely interesting to note that uneducated and ignorant people such as the fishing-folk of this country appear to have discovered for themselves a thoroughly scientific method of dealing with these epidemics.

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Appendix giving a list of water-plants, with vernacular names where known, that are beneficial in tanks by assisting to maintain a high percentage of oxygen in the water :—

PHANEROGAMIA.

Fam.—Nymphæceæ.

Nymphæa Lotus Linn. Vern. Kambal.
N. rubra Roxb. Vern. Rakta Kambal.
N. stellata Willd. Vern. Nil-Padma.
Nelumbium speciosum Willd. Vern. Padma, Kanwal (Hindi).

Fam.—Onagraceæ.

Jussiæa repens Linn. Vern. Kesara-dam.
Trapa bispinosa Roxb. Vern. Singhara ; Paniphal.

Fam.—Gentianaceæ.

Limnanthemum cristatum Griseb. Vern. Pan-chuli Chand-malla, Tagar-mul (Hindi).
L. indicum Thw. Vern. Pan-chuli, Chand-malla, Tagamul (Hindi).

Fam.—Convolvulaceæ.

Ipomeaa reptens Poir. Vern. Kalmi-Sak.

Fam.—Lentibulariaceæ.

Utricularia stellaris Linn. Vern. Jhangi.
U. exoleta R. Br.
U. reticulata SW.
U. racemosa Wall.
U. bifida Linn. Vern. Chota Jhangi.

Fam.—Ceratophyllaceæ.

Ceratophyllum demersum Linn. Vern. Jhangi.

MONOCOTYLEDONS.

Fam.—Hydrocharidaceæ.

Hydrilla verticillata Casp. Vern. Jhangi, Kureli.
Lagarosiphon Roxburghii Benth. Vern. Rasna Jhangi.
Vallisneria spiralis Linn. Vern. Syala.
Blyxa Roxburghii Rich. Vern. Syala.
Hydrocharis cellulosa Ham.
Ottelia alismoides Pers. Vern. Parmi Kalla.

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PONTIDERIACEÆ.

Eichornia speciosa. Vern. Kachuri Pana.

This plant which generally chokes up the surface of water is injurious to submerged vegetation by preventing light from penetrating down :—

Fam.—Lemnaceæ.

Lemna triscula Linn.
L. polyrhiza Linn.
L. oligorhiza Kurz.
Wolffia arrihiza Wim.
W. microscopica Kurz.

Fam.—Alismaceæ.

Alisma reniforme Don.
A. oligococeum F. Muell.
Limnophyton obtusifolium Miq.
Sagittaria guayanensis H.B.

Fam.—Naidaceæ.

Aponogeton monostachyum Linn. Vern. Jhechu (Hindi).
A. crispum Thunb.
A. echinatum Roxb.
Potamogeton indicus Linn.
P. crispus Linn.
P. pectinatus Linn.
Ruppia rostellata Koch.
Najas indica Cham.
N. minor All.
N. foveolata A. Br.
N. Gramineæ Deb.

Fam.—Cyperaceæ.

Eleocharis plantaginea R. Br.
E. fistulosa Schult.
E. spiralis R. Br.
E. capitata R. Br.
E. palustris R. Br.

Fam.—Graminaceæ.

Chamæraphis spinescens R. Br.
C. gracilis Hook. f.
Leersia hexandra SW.
Hygrorhiza aristata Nees. Vern Jungli Dal.
Coix aquatica Roxb.

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CRYPTOGAMIA.

Pteridophyta.

Fam—Parkeriaceæ.

Ceratopteris thalictroides Brogn.

Fam.—Salviniaceæ.

Salvinia cucullata Roxb. Vern. Pana.
Azolla pinnata R. Br. Vern. Chota Pana.

Fam.—Marsileaceæ.

Marsilea quadrifoliata Linn. Vern. Susni Sak.
M. minuta Linn.

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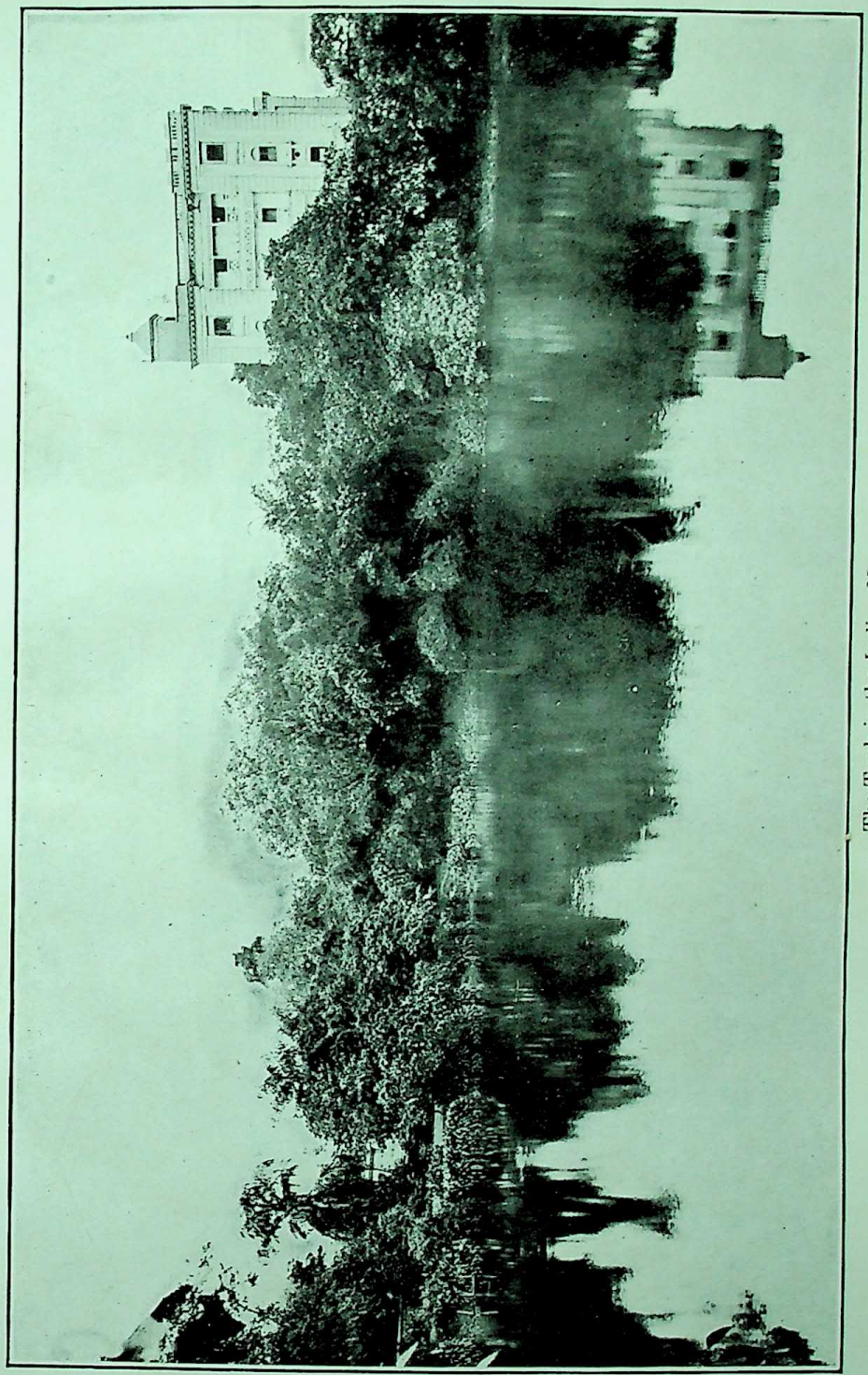

The Tank in the Indian Museum.

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A Note on Fish-Mortality in the Indaw River in Upper Burma.

By B. Chopra, D.Sc., *Zoological Survey of India, Calcutta.*

(Published with the permission of the Director, Zoological Survey of India.)

The Indaw river, or the Indaw Chaung as it is locally called, is a fairly large, rather sluggish stream in the Myitkyina district of Burma (see p. 204). It arises from the Indawgyi lake near its north eastern corner, and after its confluence with the Namkhawng Chaung near Kamaing, joins the Irrawady below Mogaung after a flow of less than 200 miles. The Indawgyi Lake, which partly feeds this stream, is an extensive stretch of fresh water lying in an open valley at an altitude of about 550 feet above sea-level. The Indaw also lies at more or less the same level, and its current, therefore, is not a swift one. From its origin from the lake for about 30 miles or so it has an extremely zig-zag course, and for a distance of several miles from the lake it has no definite banks, the water, during the rains, spreading out on either side in the thick vegetation consisting chiefly of long weeds and grasses that grow richly all along its course. This forms, especially in the rainy season, an extensive lake, or more correctly speaking, a swamp in which, however, the water is fairly deep in places. The growth of vegetation is in places so profuse that it sometimes covers the entire stream and even prevents the passage of boats. While coming down the Indaw in a boat about the middle of November, 1926, the vegetation was found to be so thick in places, that the boat could be forced through it only with some difficulty. When going upstream the difficulty of finding a passage for large country boats is, I am told, sometimes very great. In the dry season the stream has a very restricted flow.

At a distance of about 12 miles from the lake, the Indaw is joined by the Namting, a typical hill-stream in its upper reaches, but becoming more or less sluggish, like the Indaw itself, near its junction with the latter. The two streams join at Chaungwa, a large fishing village and the most important fishing centre in the whole locality. As the Namting flows for most of its course through a hilly region and has an extensive drainage area it brings down to the Indaw a large volume of water, which during the rains is considerably more than the contribution the latter receives from the Indawgyi lake.

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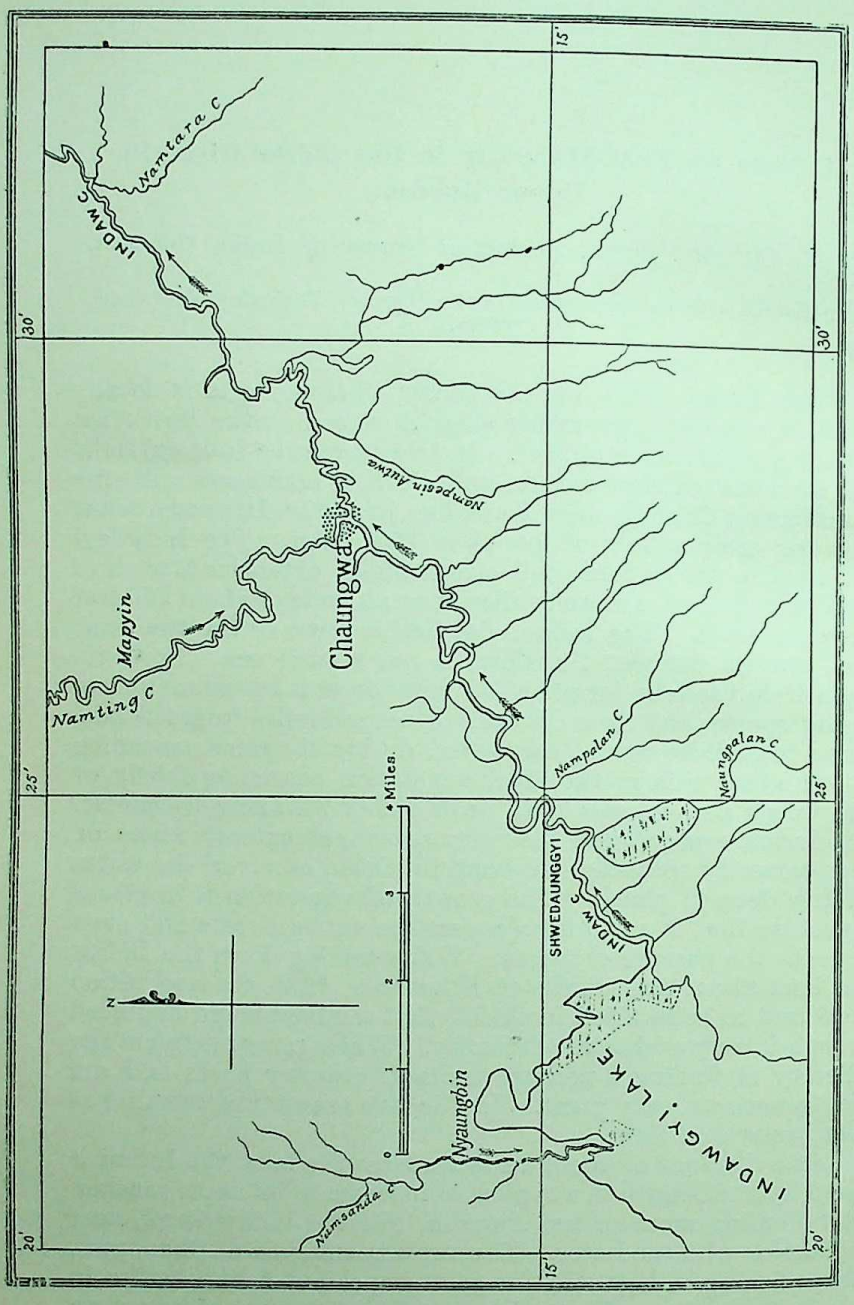

Map showing a part of the Indawgyi Lake, the point of origin of the Indaw River and its junction with the Namting at Chaungwa.
The arrows indicate the course of the streams at normal times.

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In the course of my investigations towards the end of 1926 on the fauna of the Indawgyi lake and its connected streams, I was informed by the local fishermen that an extremely large number of fish die every year at certain definite seasons both in some places in the lake as well as in the Indaw river itself. These two mortalities—one in the lake and the other in the river—occur at different times of the year and are probably due to different sets of conditions. The present note deals with the mortality in the Indaw river only. The facts, as stated here, are not based on my personal observations, but have been collected from fishermen and others living in places where this mortality takes place, as also from the Township Officer and the Subdivisional Officer, Mr. T. P. Dewar, of Kamaing, in whose jurisdiction this area lies.

During the rainy season and especially in the Burmese months *Nayon* and *Waso* (approximately from the middle of July to the middle of September) and sometimes in *Wagaung* also (September-October) the Namting brings down a very large volume of water, and, whenever there is an especially heavy rainfall on the hills along its course, its current is said to become extremely swift. At this time of the year, owing to the general heavy rainfall, the Indaw also has a large flow, and the water, between its origin from the lake and its junction with the Namting at Chaungwa, overflows considerably on both sides, resulting in the formation of the swampy conditions already referred to. Whenever the Namting brings down an exceptionally large quantity of water following on a heavy rainfall, some of this water tries to force its way up the Indaw into the lake, while the rest of it flows down in the usual manner. Now at such a time there are three currents in this area: (1) the usual flow from the lake down the Indaw; (2) a part of the Namting water trying to go upstream and opposing the first current; and (3) the usual flow downstream beyond Chaungwa, fed chiefly under these conditions by the Namting alone. It is the second current, or rather the deadlock caused by it, that brings about the fish-mortality. Owing to the extremely circuitous course of the Indaw in this area the Namting water seldom actually reaches the lake, but it always succeeds in causing a more or less complete stoppage of any flow in the Indaw between its origin and its confluence with the Namting at Chaungwa. As a result of this the water stagnates and is said to become "black" in colour, foul-smelling and "poisonous." In fact this water is so distinct in colour, smell, etc., that it is called "*ye-bok*" (foul-water) as opposed to the "*ye-cho*," or sweet water, that is at this time flowing down the Indaw beyond Chaungwa. There is said to be a more or less distinct line of demarcation between these waters; on one side of the line the water is fresh and sweet, while at a little distance upstream it is foul and "poisonous." It is in this foul water or *ye-bok* that the fish die in

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enormous numbers. Sometimes this foul water extends for only a few miles upstream, while at other periods it reaches as far as the point of origin of the Indaw, and, in exceptional cases, even enters the lake itself. The mortality is, however, most severe in the first few miles upstream from Chaungwa, becoming less and less so as we go further away from this point. It is said never to occur in the lake itself, and is but slight in the Indaw near its origin.

When the Namting water comes down in large volume and causes the stoppage of flow, as already explained, the people living at Chaungwa and in the neighbouring villages know that the fish are going to die in a few days' time, and they, therefore, get ready to collect them. The water remains in this stagnant condition for some days before the fish actually commence to die, and the mortality itself is said to last from three or four days to as long as a week or more. When the Namting water subsides, and the flow from the Indawgyi, therefore, becomes proportionally stronger, the foul water is swept downstream and is replaced by fresh water from the lake and the mortality then ceases. But in the course of these few days such a large number of fish die that the inhabitants of Chaungwa and some six other villages near by are unable to collect all the dead fish, and thousands are, therefore, allowed to rot and are wasted. Except for the mud-inhabiting fishes all kinds of fish, both large and small, are said to die, and the mortality does not affect any one particular species more severely than others. The carps are, however, said to die in somewhat larger numbers than the cat-fishes, but even the prawns, etc., are affected.

The mortality may take place as many as three or four times in a year and is always said to follow a heavy fall of rain on the hills, the water of which is collected by the Namting. If, however, soon after the water begins to stagnate there is a fall of rain in the affected area the mortality is not severe, and even may not take place at all. If a heavy rainfall occurs in the course of a mortality epidemic, its severity is considerably lessened, and it is then seen that fishes struggle to get near the banks into the fresh water that is pouring into the stream from the sides. If successful in doing this, a large number of dying fish recover, become active again and continue to live.

The villagers living in this area pay a tax to the Government for the privilege of collecting the dead fish. Each household pays Rs. 4 per year and its members are allowed to collect as many dead fish as they can. The supply is, however, so abundant that the villagers, I am informed, care to collect only the dying or the freshly-dead fish, all others being left in the stream to rot and be ultimately carried downstream with the current. The fish thus collected are eaten fresh or are smoked, salted or dried and large quantities are exported. The total

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revenue collected by the Government under this head is about Rs. 1,000 per year.

In spite of the very large number of fish that thus die every year the stock of fish living in the lake and in the Indaw river does not appear to be affected in any way. The quantity of fish caught at the various fisheries on the river is more or less the same year after year.

From the facts as stated above I am unable to come to any definite conclusion regarding the exact cause of this mortality. The water of the Namting though, naturally muddy during rain, is, so far as I can gather from the people living in the locality, not muddy enough to cause the suffocation of the fish, and the two opposing currents in the Indaw do not appear to stir up any exceptionally large quantities of mud from the bottom, for I am assured by the villagers of Chaungwa that the "black" colour of the water at the time of the fish-mortality is not due to the mud particles held in suspension. It is, however, note-worthy that carp, that prefer living in clear water, are said to die in somewhat larger numbers than the cat-fishes, and that fishes habitually living in mud, like *Ophiocephalus* (*Nga-yan*), *Clarias* (*Nga-khu*), *Saccobranchus* (*Nga-gyee*), etc., are not affected to any appreciable extent.

It is commonly believed in the affected area that the long weeds and grasses growing richly all along the Indaw, that are partly or wholly submerged under water at this time of the year, cause by their disintegration the "poisonous" qualities of the water that are responsible for the fish-mortality. Though this appears to be a mere conjecture on the part of the villagers, it is, however, quite possible that there may be some truth in this statement. The unusual conditions at such times of the year, resulting in a more or less complete stagnation of water, no doubt cause these weeds to disintegrate on a very large scale, and a considerable quantity of oxygen normally present in the water must be used up in this process. As there is practically no flow at this time to replace this impoverished water by fresh quantities, this may ultimately result in the water becoming very poor in its oxygen content. and may cause the fish to die. It must, however, be mentioned in this connection that the same weeds and grasses that grow in this area are found almost all over the country in and around water, both flowing and stagnant, and do not appear to cause any harm elsewhere.

Cases of fish-mortality similar to the one described above appear to be extremely rare, if not altogether unknown so far. I have not come across a single record of a similar case in the entire literature on the subject mentioned in Dean's *Bibliography of Fishes*[1], nor has a perusal of the *Zoological Records*

[1] Dean, *A Bibliography of Fishes*, 3 Vols. (1916–1923).

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subsequent to 1916—the year to which Dean's excellent *Bibliography* extends—helped me in this matter. Sewell's[1] paper on fish-mortality in tanks and ponds in Bengal is of great interest in this connection. This mortality takes place occasionally in tanks in Calcutta and other places a little before the rainy season starts, when the weather is very hot and there is hardly any breeze in the atmosphere. These meteorological conditions result in a complete stagnation of water, accompanied by a very rapid growth of the planctonic organisms of the tank. The stagnation of the water prevents the proper aeration of the lower strata, and leads to an increase, to an extent that eventually becomes lethal, of the amount of carbon dioxide present in it. As the water becomes richer in carbon dioxide the fish become poisoned and ultimately die in large numbers. I am unable to say if anything similar happens in the Indaw also, but it seems probable that the death of fish, etc., here too is in some way due to gas-poisoning, possibly due to an excessive formation of carbon dioxide or of methane (marsh gas, CH_4) derived from the rotting vegetation. Until accurate scientific observations are taken at the spot, it is extremely difficult to form any definite opinion on the matter, but the fact that such fishes as *Ophiocephalus*, *Clarias* and *Saccobranchus* are not affected lends support to the above view. In all of these genera, there is present an accessory breathing apparatus that enables such fish to carry out a respiratory interchange with the air in addition to the usual and normal interchange with the water, and this would render such fish more or less unaffected by chemical changes in the gaseous content of the water, that would be sufficient to cause the death of others dependent for their breathing on the water alone.

Finally, I have to express my thanks to Mr. T. P. Dewar, Subdivisional officer of Kamaing, for giving me valuable information on several points, as also for going through this note with me. Major R. B. Seymour Sewell, Director, Zoological Survey of India, has also kindly gone through the manuscript, and has made several valuable suggestions, for which my best thanks are due to him.

Since the above went to the press my colleague Dr. Sunder Lal Hora has brought to my notice a paper by Francis Day[2] entitled "On Amphibious and Migratory Fishes of Asia," in which the author has described, among other things, some cases of fish-mortality somewhat similar to the one reported on by me in the preceding pages. I quote here some of his passages in full.

"The collector of Bustee reported, in answer to my

[1] Sewell, *Journ. Proc. Asiat. Soc. Bengal*, XXII, pp. 177.
[2] Day, *Journ. Linn. Soc. London* (Zool.), XIII, 198–215 (1878).

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inquiries, 'The Bela Tal at Jeitpur is formed by an embankment across a low valley, and the course of a small hill-stream lies through it. During the hot weather this stream becomes almost dry, only retaining water in holes in the midst of the jungle; these holes become full of dead leaves, and with the first burst of the rains the putrid contents are swept down into the lake. The consequence, I was told on the spot, is that numbers of fish are perfectly stupefied and float on the top of the water, an easy prey to any who will take them.' Mr. Hobart likewise observed, 'I have never heard of poisoning being used as a means to capture fish there; but I remember seeing the stream poisoned naturally. At the end of the cold season some rain had fallen and had washed the fresh leaves into the water, which turned, from this and other causes, to a dull red colour. The fish sickened and died in thousands. On the up-stream side of the arches of the bridges and traps (weirs spanning the river) you could see millions of fish eager to get down past the obstruction and escape from the poisoned water. For a hundred yards or so the river was a mass of living heads. The fish died in a day or two, and birds of prey came from all parts to devour them. The dead fish were carted off as manure.'"

The mortality in these cases appears to have been due to some poisonous element, probably resulting from the putrefaction of dead leaves in stagnant water, but in the following instance mentioned by Day, the death of the fish is undoubtedly to be attributed to different causes.

"The collector of Tana in Bombay remarked that when the rivers become muddy at the commencement of the monsoon, fish die in large numbers . . . . . " The large quantities of mud particles held in suspension in the water appear in this case, according to Day, to cause the death of the fish by choking their gills.

From such cases Day concludes, "During the monsoon months, when enormous quantities of rainwater descend from the hills to the rivers of the plains, the fish are often seen dead in large numbers, due either to the water being poisoned from the vegetation, or simply to its being fouled, preventing respiration by choking the gills. If the dead fish are examined, it will be found that poisoned water kills all kinds of fish, fouled water only those which have no accessory means of respiration, in fact all which are not amphibious." The poisoning referred to by Day is no doubt the poisoning of the water itself, and not that of its gaseous contents alone, for in the latter case, as suggested by me (*vide antea*, p. 208), the amphibious fish, like *Ophiocephalus*, *Clarias*, etc., would not be affected to any considerable extent. In the Indaw river the mortality is mostly confined to those fishes that have no secondary respiratory apparatus and cannot, therefore, breathe from the atmosphere

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direct. It seems likely, therefore, that death is due either to the water becoming excessively muddy and thus choking the gills of the fish, or, more probably, to poisoning in its gaseous contents.

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A Few Types of Indian Sedentary Games.

By Hem Chandra Das-Gupta, M.A., F.G.S.

This short note has been drawn up to put on record an account of three types of sedentary games, the description of which, as far as I know, has not hitherto been published. One of them is prevalent in the Central Provinces and the other two in Orissa. For the details of the Central Provinces game (*egára guṭi*) I am indebted to a gentleman of the district of Bhandara whom I met at the Linga Railway Station (Chhindwara district) a few years ago, while the details of the Orissa game were obtained from my own Oriya cook.

The diagram adopted for the Central Provinces game is

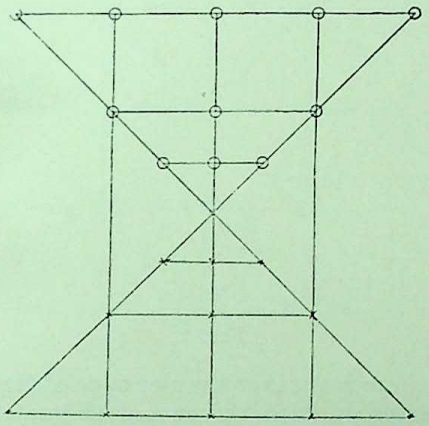

Fig. 1.

shown above (fig. 1). Two players are necessary for the game. There are 23 cross-points and of these 22 are filled up with ballets of two different descriptions, each player having 11 while the central cross-point is kept vacant at the beginning of the game. The play proceeds in the usual way of jumping over and capturing the ballet of the adversary lying on the next cross-point if there be an un-occupied cross-point just beyond the latter and in the same line.

The diagram used for this play is peculiar and its like has not been recorded from any other part of India. The game resembles the Punjab game of *bára guṭi* in having only the central point vacant.[1]

[1] Cal. Rev., pp. 510–513, 1923.

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The Orissa games are two types of tiger-play. The diagram used in one of the games is given below (see fig. 2).

Two persons are necessary for playing this game, one in charge of the tigers and the other in charge of the goats. The tigers are 4 in number while the number of the goats is 20. Before the commencement of the game, the tigers are arranged at the places indicated in the figure by the circles and 4 goats are kept on any 4 cross-points according to the discretion of the player. The move begins with the man who has got the tigers, and the player who has the remaining 16 goats in his hand must place all of them on the cross-points one after another before he may move any goat on the diagram from one cross-point to another. The player with the tiger tries to capture as many goats as he can while the other player aims at checkmating his opponent.

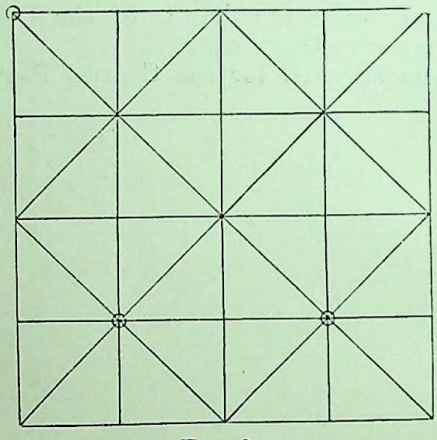

FIG. 2.

In Orissa there is another simpler type of tiger-play in which the game is carried on with 1 tiger and 12 goats. In this game the tiger and all the goats are placed on the cross-points first and the play is carried on under the usual rules. The diagram of the game is given on the next page (see fig. 3).

It may be noted that a game exactly like the latter type of tiger-play is prevalent in parts of Bengal while the former type of game may be compared with that known as the *Kulaochal* played by the Hos of Kolhan and described by Mr. Majumdar,[1] though there are some important points of distinction between them. In this connection attention may be drawn to the game of *Rimoe* or tiger-play prevalent at Simaloer (Sumatra) and described by Jacobson.[2] Though there are important differences between the Orissa game as described

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[1] Man in India, Vol. V, pp. 196–198, 1925.

[2] Tijdsch. Ind. Taal-, Land- en Volkenkunde, Deel LVIII, pp. 8–10, 1919.

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in connection with figure 2 and the Sumatra game, there is one point in which the Orissa play and the Sumatra play agree remarkably as in both cases, before the player with the goats is allowed to move the ballets from one cross-point to another, he has to put all his ballets on the cross-points. This similarity becomes quite clear when we bear in mind the description of the Orissa game as given above and the following remark of Mr. Jacobson on the point :—

Zoolang de tegenpartij nog stukken in de hand heeft, mag zij hare stukken op het bord niet verschuiven.

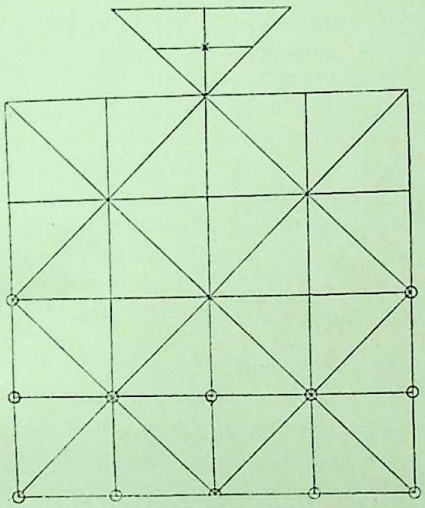

FIG. 3.

Attention may be drawn in this connection to the game of wolf and sheep prevalent among the Tibetans.[1] The diagram used by the Tibetans is just like the one figured above (fig. 3) with the exception that the lines joining the middle points of the four sides of the big square are wanting in the Tibetan game in which the wolf is located at the middle of the square and not within the triangle as in the Indian game.

[1] Rin-chen Lha-Mo (Mrs. Louis King) : We Tibetans, pp. 141–143, 1926.

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Palaeontological Notes on the Panchet Beds at Deoli, near Asansol.

By Hem Chandra Das-Gupta, M.A., F.G.S.

Introduction.

In a previous communication I gave an account of a few reptilian bones obtained from the Panchet beds, at Deoli, in the neighbourhood of Asansol (2) and in the present paper I propose to give an account of a few other fossils collected from these beds, and stored in the Geological Department of the Presidency College, Calcutta. The specimens to be described in this note were obtained during my trips to this locality in charge of students from the Presidency College, and they are (i) the carapace of a brachyurous crab (?), (ii) stegocephalian cranium, and (iii) a reptilian coracoid.

Brachyurous Carapace.

(Pl. 11, fig. 1.)

While cleansing the vertebrate fossils obtained from this locality, I came across a specimen which appeared to me to be a fragment of the carapace of a brachyurous crab. The specimen, which is almost circular, is extremely small. It is slightly vaulted and contains on the surface a few coarse granules. There is a marked ridge running from the anterior towards the posterior border while only slight traces of the partitioning off of the carapace are visible. One small region in the centre and a little bigger one in the posterior portion can be easily distinguished from the two big, slightly sloping regions lying on each side of the ridge

The bed in which the fossil has been found is, according to Dr. Cotter (1), Triassic in age. Brachyurous crabs of Triassic time are very rare and only two genera, *Cyclocarcinus* and *Mesoprosopon* have been described from the Alpine Trias by Stolley (6). The Panchet fossil is quite distinct from *Cyclocarcinus* as the latter shows no trace of any lobation in the carapace. *Mesoprosopon* is pentagonal in outline, and has a bay-like structure in the posterior margin with a non-lobed cephalo-thorax but with a median swelling running from the frontal margin to the neighbourhood of the bay at the posterior margin. It is thus clear that the carapace obtained from the Panchet beds is quite unlike *Mesoprosopon*. The Permo-Triassic genus *Oonocarcinus* which is longer than broad is entirely

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different. It may be further noted that the Panchet beds are of freshwater origin and, if my identification is correct, the specimen is of importance as being possibly a remnant of the earliest fresh-water brachyurous crab ever recorded.

Stegocephalian cranium.

(Pl. 11, fig. 2.)

In the year 1879 Lydekker described and figured a portion of the frontal region of a batrachian cranium which he provisionally identified as belonging to Huxley's genotype *Pachygonia incurvata* (4). The Presidency College collection includes the posterior part of a batrachian cranium which fits in so nicely with the specimen described and figured by Lydekker as to leave no reasonable doubt that these two not only belong to the same species but are very likely two parts of the same cranium, the only superficial difference that is to be noticed being entirely due to the difference in weathering as there was an interval of about 40 years between the collection of the two specimens, though the sculpturing where it has been preserved is the same in them. The fragment shows the occipital crest to be very well-developed. Remnants of the epiotic cornua are found on the two sides of the supra-occipital in the shape of two small prominences, while the supra-occipitals are characterised by two small fossae one on each side. The parietals are united along a median line, a continuation of the anteroposterior median division mentioned by Lydekker. A portion of the parietal foramen has also been preserved. This was situated near the anterior border of the parietal region. The lower portion of the specimen shows the skull cavity, the commencement of which is to be found in the posterior portion of the frontal fragment as described by Lydekker.

Reptilian coracoid.

(Pl. 11, fig. 3.)

This section contains the notice of a flat bone, the like of which has not hitherto been recorded from the Panchet beds of India. The bone is, unfortunately, not completely preserved, but from its general appearance and the presence of a foramen, it seems to be a coracoid from the left side. Besides the foramen, there is also a notch which is very distinctly seen on the dorsal surface. The notch is bounded on two sides by what appear to be the remnants of two facettes suggesting the possibility that the notch was bridged over by some structure; whether it was by a pre-coracoid or by a scapula it is quite impossible to say definitely; it was more probably by the base of a scapula. The foramen runs downwards and forwards, and is

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situated very close to the two facettes. Its external surface is flat while the other surface is slightly concave. The presence of the foramen in the body of the coracoid, and very close to the articular margin, leads one to connect it with a dinosaur, though it should be pointed out that it is not rounded as the dinosaurian coracoids usually are. The general character of the bone and the fact that dinosaurian teeth were found in these beds long ago have, however, led me to identify the bone, at least provisionally, as belonging to the Triassic Indian megalosaur known as *Epicampodon* (*Ankistrodon*) *indicum* described by Huxley (3). It may be added, in passing, that in 1879 Lydekker described a small bone as the coracoid of this reptile (4), but subsequently it was recognised by him that it was a coracoid not of *Epicampodon* (*Ankistrodon*) *indicum*, but of *Lystrosaurus orientalis* (5). This latter bone had no foramen.

Bibliography.

1. Cotter, G. de P. A revised Classification of the Gondwana System. *Rec. Geol. Surv. Ind.*, *Vol. XLVIII*, pp. 23–33, 1917.
2. Das-Gupta, H. C. Notes on the Panchet Reptile. *Sir Asutosh Mookerjee Silver Jubilee Volumes*, *Vol. II*, *Science*, pp. 237–241, with plate, 1922. (Published by the Calcutta University.)
3. Huxley, T. H. Vertebrate Fossils from the Panchet Rocks. *Pal. Ind.*, *Ser. IV.*, *pt.* 1, pp. 3–24, 1865.
4. Lydekker, R. Indian pre-Tertiary Vertebrata.—Reptilia and Batrachia. *Pal. Ind.*, *Ser. IV.*, *pt.* 3., pp. 1–36, 1879.
5. Lydekker, R. On the pectoral and pelvic Girdles and Skull of the Indian Dicynodonts. *Rec. Geol. Surv. Ind.*, *Vol. XXIII*, pp. 17–20, 1890.
6. Stolley, E. Über einige Brachyuren aus der Trias and dem Dogger der Alpen. *Jahrb. K. K. Geol. Reichsanst.*, *Vol. LXIV*, pp. 675–682, 1915.

EXPLANATION OF PLATE 11.

Fig. 1. Carapace of a brachyurous crab (?) × 4.

Fig. 2. A stegocephalian cranium possibly belonging to *Pachygonia incurvata*, Huxley × 2.

Fig. 3. A dinosaurian coracoid possibly belonging to *Epicampodon* (*Ankistrodon*) *indicum*, Huxley. External view × 2.

(*a*) humeral articulation, (*b*) scapular margin, (*c*) coracoid foramen.

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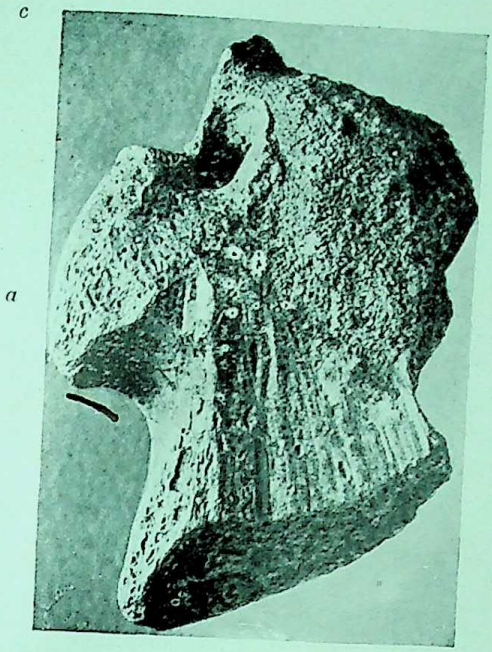

Fig. 3.

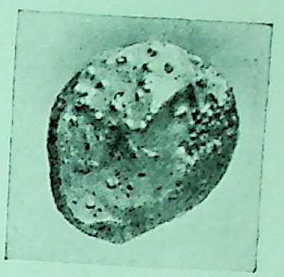

Fig. 1.

Fig. 2.

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The Extinct Iron Industry of the Neighbourhood of Mount Popa, Upper Burma, with Notes on the Microscopic Study of the Slags.[1]

By Harbans Lall Chhibber, M.Sc., F.G.S., F.R.G.S., *Head of the Department of Geology and Geography, University College, University of Rangoon.*

This communication is intended to place on record an account of the indigenous and wide-spread but now extinct iron industry of Burma. The writer came across numerous old iron-slag heaps and deserted furnaces during the investigation of the geology of the Mount Popa area.[2] These were observed only on the western and north-western sides of Mount Popa, where the rocks belong to the Irrawady series, the famous storehouse of the ferruginous concretions which formed the ore material for this smelting industry.

Previous observers.—Both Theobald[3] and Dr. Pascoe[4] in their excellent publications have alluded to the smelting of iron in the past. As recorded by Bell,[5] legend connects the earliest history of the extinct smelting industry in Burma with Mount Popa. He writes "The soldiers who followed the fortunes of King Anawrata and his successors are said to have been armed with bows and arrows, swords and spears, home-made products forged from the iron smelted at Popa. Round the Popa legend centres the earliest history of the forge. According to tradition there was a great earthquake in 442 B.C. during which the great cone of Popa rose from the plains, but the native chroniclers leave no record of how long it was active and when it became extinct. And indeed so recent a date as that would be acceptable to no geologist.[6] Following the tradition which has given to volcanoes a name derived from

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[1] Though the title of the paper indicates the detailed study of the industry in the neighbourhood of Mount Popa, the description given below applies in fact to a much wider region of Burma.

[2] Both papers read at the Indian Science Congress, Bombay, 1926, vide *Proc. Ind. Sci. Cong.*, Bombay, 1926. *Trans. Mining Geol. Inst. India*, Vol. XXI, 1927, pp. 226–310.

[3] *Mem. Geol. Surv. India*, Vol. X, Pt. 2, 1873.

[4] *Mem. Geol. Surv. India*, Vol. XL, 1912.

[5] Iron and Steel work in Burma, Research Monograph, *Government Printing Press*, Rangoon, 1907.

[6] As recorded in the abstract of the paper on the "Geology of Mount Popa Area" read at the Indian Science Congress, Bombay, 1926, the writer, after a study of this old volcano, is of opinion that there may be some truth in the legend and that the volcanic activity, which began towards the close of the Pliocene period, ceased only in historic times.

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Vulcan, the old armourer god, Maung Tin Dè, the legendary hero of Popa myth is represented as a blacksmith of prodigious strength. His date by the chronicles is the fourth century A.D."

Geology.—A word in passing may be said about the geology of the rocks which contain these ferruginous concretions. As a rule these concretions are mainly found in the Irrawaddian ; however, occasionally the author has picked them up from the Peguan rocks also. As they are not of any economic importance when associated with the Pegu series, it is not necessary to give an account of the geology of the latter, for which the reader is referred to the publications of Theobald,[1] Pascoe,[2] and others. The Irrawaddy series consists of sand-rock and sandstones of various colours with occasional interbedded clays and finely laminated, greenish, friable, argillaceous sandstones. Sometimes the rocks contain, besides the ferruginous concretions, hard, rounded, siliceous and variously shaped calcareous or siliceous concretions. Quartz pebbles and ferruginous conglomerates are also associated with these rocks. Fossil wood is extremely abundant ; big tree trunks of huge size are often seen. Often surface layers are coloured red, forming "Red Earth", due to the leaching of iron salts from the ferruginous concretions during the rainy season, their attraction to the surface by the force of capillarity and their subsequent deposition during the period of drought. It is apparent, therefore, that the presence of silicified wood and curiously shaped calcareous and siliceous concretions in the Irrawaddian affords further evidence of the activity of various types of mineralising solutions through the sands.

Ore-material.—As remarked above, the ferruginous concretions embedded in the Irrawaddian sands furnished the iron-ore. Both solid and hollow concretions occur (see Plate 12, Figs. 1 and 2) though the latter predominate. The former are mostly discoidal or ellipsoidal in form, but the latter present every variety of form and shape. They are cylindrical, spheroidal, discoidal, mammillary and in fact possess all kinds of fantastic shapes as seen in Plate 13, Figs. 1 and 2. As will be remarked latter on, the concretions are composed of both amorphous and crystalline material. In the former case, on fracture the concretion is seen to consist of concentric layers of brown hematite with a hollow interior filled with yellow or reddish brown ochre. The concretions which consist of crystalline material, exhibit an iron-black external crust with a similar shrunken core, but the surface is greatly roughened by strongly adhering quartz grains, which also occur as inclusions in the iron ores, sometimes forming a sort of highly ferruginous grit. On the other hand, when the material is amorphous the quartz grains are easily separated from the iron ore. In

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[1] and [2] Op cit. sup.

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addition to quartz grains, particles of felspar, a constituent of the Irrawaddian sands, are also present. They have become white or pinkish-white through alteration. The internal surface of the hollow concretions generally presents botryoidal or mammillary appearances.

Usually the concretions are from one to three inches in length, but bigger specimens are not uncommon. They sometimes attain a length of eight inches or even a foot. The maximum thickness of a single concretion seldom exceeds three inches, but the thickness of the band of concretions may be sometimes over six inches; it should be noted that their disposition is extremely irregular.

Thin beds of ferruginous conglomerate are often associated with the concretions. The conglomerates consist of water-worn and subangular pebbles of quartz cemented by a ferruginous matrix. Quartz pebbles are well distributed in these rocks, only the percolation of ferruginous solutions is necessary to bind them together, and it appears certain that the solutions which were instrumental in the formation of the concretions, provided also the cementing material for the conglomerates. Sometimes the number of quartz pebbles is small and the ferruginous material predominates; in that case, the conglomerates also, after the removal of most of the siliceous pebbles, were used as ore material.

Mineralogy of the concretions and their mode of origin.— The chief mineral making up these concretions is hematite, as the streak is distinctly cherry-red in colour. Limonitic concretions giving a yellowish brown streak are not rare. Both crystalline and amorphous forms of hematite are to be observed in the concretions. It has been shown by Rogers[1] that hematite occurs both in crystalline and amorphous forms. Apart from separate concretions of hematite and limonite, some specimens exhibit alternating bands of brownish red hematite and yellowish orange limonite. There may be a gentle gradation from one mineral into the other. A little psilomelane is also associated with these concretions, especially in the botryoidal forms, as the presence of manganese was confirmed chemically. It is well known that colloidal iron and manganese compounds often occur together and they may have originated from the same source.

The concentric banded structure is distinctly visible in most of the specimens (see Plate 12, Figs. 1 and 2). It has been shown that concretions with such banded structure have a colloidal origin and the different bands indicate rhythmic deposition of iron oxides from colloidal solutions, forming the so-called *Liesegang* rings. Moreover the writer has tried to prove in a

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[1] *Journ. Geology*, 1917.

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separate paper[1] the colloidal origin of fossil wood of the Irrawaddian and it is shown that siliceous, calcareous and ferruginous solutions have all participated in its formation. Hence it is very likely that the same colloidal ferruginous solutions gave rise to the iron concretions. Van Bemmelen[2] has shown that the yellowish and reddish-brown varieties of iron oxides are colloidal and not definite hydrates, and it has been shown by H. W. Fisher,[2] that by dehydration the yellow colloidal form could be changed to reddish brown and finally to a brown black, which he considered to be hematite. The conclusion arrived at as a result of laboratory work is also supported by field evidence. It is admirably illustrated in the natural specimens in the author's collections. The origin of colloidal hydroxides of iron is considered in detail by Van Bemmelen,[2] Mugg,[2] and Cornu and his co-workers.[2] According to Cornu and his co-workers the dehydration sequence in nature is :

Limonite ⟶ Hydrohematite ⟶ Hematite.

The author has specimens in his collections which show every degree of dehydration. Apart from separate specimens of the different hydrated ferric oxides, all three are sometimes to be seen in a single specimen. In the specimen numbered P/313[3] the innermost band marked + is of distinct light orange-yellow colour with yellow streak while the outer bands are reddish brown in colour finally merging into the brownish black layers of the exterior. This specimen shows, therefore, that the dehydration started from the exterior and proceeded inwards where still unaltered bands are seen. This is illustrated in the polished specimen (see Plate 12, Fig. 1). The actual surface of these specimens is coated with a yellowish crust of limonite due to atmospheric weathering indicating a rehydration of the material. It has been shown that under the influence of subaerial weathering hematite takes up water and passes into turgite and ultimately into goethite and limonite or brown hematite. Sir Thomas Holland has observed the various stages of decomposition amongst the Salem iron ores, specially the production of small quantities of yellow ochre due to the oxidation and hydration of magnetite.[4]

It is legitimate to attribute a colloidal origin to concretions consisting of crystalline material, as it has been

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[1] Chibber, H. L. The Origin and Mineral Constitution of the Late Tertiary Fossil Wood in Burma, *Proc. Ind. Sci. Cong.*, Bombay, 1926.

[2] Fourth Report of Colloid Chemistry. The application of colloid chemistry to Mineralogy and Petrology by Alexander Scott.

[3] These numbers correspond to the register numbers of specimens in the Popa collection, preserved in the Dept. of Geology, University of Rangoon.

[4] *Rec. Geol. Surv. Ind.*, Vol. XXV, Pt. 3, 1892, pp. 135–159.

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shown by Doelter[1] that colloids may be transformed into crystalloids under suitable conditions. It is very likely that pressure has brought about the dehydration and conversion of colloids into crystalloids; and evidence of earth-movements involving pressure is common in the Tertiary rocks of Burma. It is also probable that the crystalline concretions were formed by the direct deposition of crystalline material.

The experimental work of Schade[2] has shown that concretions form when a substance changes from the emulsoid to the solid state, the structure being radial if the solid is a purely crystalline substance, and concentric if the solid is amorphous or a mixture. In these concretions only the concentric structure is to be observed and the material is actually either amorphous or a mixture. In this case the writer is strongly of the belief that the concretions in question, shown in the figures, have been formed by the periodic precipitation of hydrogels of ferric oxide, which on dehydration have partly or wholly changed to hematite. Similar rhythmic banding has also been noted by the writer in the neighbouring silicified tuffs of Kyaukpadaung;[3] these bands have been formed by the diffusion of colloidal ferric oxide into the fine-grained homogeneous silicified tuffs.

Further, the occurrence of ferruginous conglomerates in the area, where the matrix consists of ferruginous material, also supports such an origin, as colloids are known to play an important part as binding materials. Gels of ferric hydroxide act as cements, not unlike gelatinous silica. It is immaterial that, like some of the concretions, the matrix may have become crystalline afterwards.

A word may be said about the banded structure exhibited in these concretions. It is quite similar to the well known oolitic and pisolitic structures, but developed on a much larger scale. Bucher[4] in his paper on "Oolites and Spherulites" has remarked that ordinary concretions seem to differ only in size As the names "oolite" and "pisolite" already exist to indicate the size of grain of these concentric structures, it is advantageous to have a distinct name for this structure as well. For this purpose the term "torolite" has been proposed.[5] The derivation is from the Latin word "torus" a

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[1] Doelter, C., *Koll. Zeit.* (1910), Chemical Abstracts, 1911, ii, 376.

[2] Bucher, W. H., "On Oolites and Spherulites." *Jour. Geology*, Vol. XXVI, 1918, p. 593.

[3] Chibber, H. L. Rhythmic banding of ferric oxide in silicified rhyolite tuffs, *Proc. Ind. Sci. Cong.*, Bombay, 1926, *Geol. Mag.*, 1926. Pp. 7–10.

[4] Bucher, W. H., "On Oolites & Spherulites," *Journ. Geology*, Vol. XXVI, 1918.

[5] Chhibber, H. L., and Stamp, L. D. "Oolite, Pisolite and Torolite" *Geol. Mag.*, 1926, p. 96.

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pillow or bolster. Although not absolutely parallel in derivation with oolite and pisolite, which are directly from Greek roots, "torus" has the advantage of connection with the Greek root "στορέννυμι." Torolite is thus used for a rock consisting of pillow-shaped masses with a concentric structure, identical in appearance and origin with pisolite, but on a much larger scale. So all such structures bigger than those comprised under pisolitic will be defined as "torolitic." Sometimes the individual concretions are separated from one another, but the term torolite may still be used to distinguish the masses from concretions of other textures and origin.

It has been observed that the concretions are more or less localised in their distribution and the localisation may have been caused by the presence of the nuclei of clay, as kernels of altered clay (yellow or red ochre) are seen inside the hollow concretions. Further, clay is so fine grained as to be almost colloidal in character and probably there existed some physical affinity between the two. The existence of such affinity we already know in the case of clay ironstones which are formed by the diffusion of hydrogels of ferric oxide or iron carbonates into clay. Examples with clay ironstone centres are also represented among the concretions under description. Another probability is that the nuclei of ferruginous material already present may have facilitated the rhythmic deposition of ferruginous material round them.

The amount of iron was carefully determined in two specimens of concretions and the results are given below :—

(1) P/313 : Locality : one-third mile south of Phogan ; Fe : 26·3%.

(2) P/152 : Locality : near Thanbo village ; Fe : 22·8%.

The extent of this industry in the past can be judged by the widespread occurrence of slag-heaps that are found near the furnaces which were deserted about forty years ago. In the neighbourhood of Mount Popa many abandoned furnaces are to be seen round several villages, e.g., Thanbo, Chhaungbya Daungle, Sinluaing, Kywelu, etc. Theobald [1] also noticed similar furnaces near the villages of Shanybander, Kiungalay and Yaybon in the Province of Pegu (the then British Burma). Blanford [2] records having seen on his way to Mount Popa iron furnaces near Kywelu but mentions that they were not working at the season of his visit. It is remarkable that the industry at Thanbo village about 3 miles south-west of Popa village was carried on on such a large scale that the village was named after the industry, and remains of several deserted furnaces, more

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1 *Mem. Geol. Surv. India,* Vol. X, Pt. 2, 1873.
2 *Journ. Asiat. Soc. Bengal,* Vol. XXXI, 1862.

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than a dozen in number, are still to be seen along the bank of the stream. Sometimes a number of these furnaces are seen in a line (*See* Plate 14).

The furnaces and the methods of extracting iron were very simple. The shape of the former will be clear from the sketch (*See* Plate 15, Fig. 1). A furnace simply consisted of a sort of circular or oval pit, three to four feet in diameter, dug in compact earth in certain raised portions of the ground, e.g. the bank of a stream. The pit was connected with a circular hole above, a little more than a foot in diameter, through which the smelters subsequently added supplies of charcoal. It is remarkable that they had no opening to provide a blast. They pounded the ore to small pieces, about the size of a walnut and arranged alternate layers of charcoal and iron ore in the pit. After igniting the charcoal they closed the mouth of the pit by means of earth to keep back the heat and as remarked above continued adding charcoal from above till the temperature became high enough to melt the ore. They then allowed the molten metal to flow out by tapping the lower part of the furnace and the slag was separated. It is noteworthy that they used absolutely no flux except that furnished by the ash of the charcoal used as fuel. This was borne out by enquiries made of the villagers. The author wonders if they even knew the use of fluxes. As the ore was obtained free of cost they were not careful in economising iron and could afford to lose such a highly ferriferrous slag as the actual slag is shown by the microscope and chemical analysis to be. Further, there seem to be no deposits of carbonates in the vicinity except a few bands of limestone in the Peguan rocks some distance away.

The fuel, as remarked above, was charcoal, made from the wood of various trees especially mango (*Mangifera indica*) and tamarind (*Tamarindus indicus*) which abound in the neighbourhood. This fact was further confirmed by the find of specimens of slag with associated pieces of charcoal. It is believed that the iron manufactured was of good quality. The high quality may have been due to the use of charcoal in smelting and probably to the small amount of manganese which occurs in the concretions.

As the industry is already dead, the author could not gather anything about the manufacture of steel in Burma. Bell has also stated in his monograph[1] "There is no record that steel (*thanmani*) has ever been manufactured in Burma; instruments requiring sharper edge were sometimes made up from imported steel."

The natives told the writer on inquiry that each furnace could yield an income of about twenty rupees a month. It is

[1] *Op. cit.*

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noteworthy that whatever they earned was their net income as they had to spend almost nothing on iron-ore or fuel. Their only expenditure was their own labour.

For a list of the various articles of iron and steel manufactured in Burma the reader is referred to Mr. Bell's paper cited above.

In conclusion, a word about the extinction of the industry may be said. The industry was carried on on a large scale during Burmese rule but since the annexation of Upper Burma about forty years ago, the people have had to relinquish the industry. One of the reasons the villagers advanced for giving up the pursuit was that they were not allowed by the government to dig the ore-material and smelt it except under prospecting licence or mining lease. It is true that the villagers are generally too ignorant and poor to obtain a mining lease, and mining without a licence is an offence punishable by law. But another reason may be that they could not compete with imported cheap iron and hence did not find it paying to continue the industry. It may not be out of place to suggest that the authorities might do well to encourage a renewal of the former activities, if the first reason is true, as the working of the deposits on a large scale by modern methods is never likely to prove a commercial success.

Microscopic Study of the Old Iron-Slags from the Neighbourhood of Mount Popa.

The study of the iron-slags from the neighbourhood of Mount Popa forms the second instalment of the series mentioned in a previous paper.[1] It has already been remarked that slag-heaps are fairly well scattered over the area and are a fair guage of the extent of the industry in the past.

Megascopic Characters.—The colour of the slag varies from greyish to iron black with a bluish tinge while the outer surface sometimes shows a steel grey colour with a yellowish tinge. The surface and particularly the outer layers are roughened with grains of Irrawaddian sand over which the melt was thrown. The interior of the slag is much more compact than the external portions, which are highly cellular, with circular, elongated and irregular cavities. Some of the pieces are highly scoriaceous, and vesicular. The lustre varies from sub-metallic on freshly fractured surfaces to dull earthy on the outer layers. The average specific gravity determined by pycnometer is 4·01. The hardness is 5-5·5. It is remark-

[1] Chhibber, H. L., Microscopic Study of the Old Copper Slags from Amba Mata and Kumbaria, Danta State, N. Gujarat, India, *Journ. Asiat. Soc. Bengal, N.S.*, Vol. XX, 1924.

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able that with concentrated hydrochloric acid the slag gelatinizes to such an extent that a small quantity of the powdered slag treated with acid and left overnight produced a very thick jelly. With dilute acid the gelatinisation is not so well marked. It is strongly magnetic.

Microscopic Characters.—The thin section P/293[1] (from about 1½ miles north of Chhaunbya, *en route* to Daungle) is seen to consist of fayalite, babingtonite and magnetite. Fayalite is yellowish brown in colour and some of the sections show the interior lighter with the marginal area of a deeper tint. This suggests a case of zoning, i.e. the lighter interior represents normal fayalite while the outer zone was supersaturated with iron, and hence fayalite, very rich in iron, was formed. It occurs both in prismatic and hexagonal sections with acute terminations, but some of the sections are subhedral or almost circular. Some of the crystals are only skeletal; the interior has been filled either with arborescent and fantastic growths of magnetite or with residual glass. In certain cases, lines of the ground-mass are to be seen running mostly parallel to the faces of the crystals as depicted in Plate 15, Fig. 3. The explanation of the skeletal crystals given below holds good in this case also. Some of the sections are slightly pleochroic, a deeper tint being observed parallel to the elongation of the crystal. The interference colours are those of the second and third order with straight extinction. In some cases secondary outgrowth has taken place, i.e. another crystal of fayalite with perfect outline has developed round an earlier formed crystal of the same mineral which probably served as nucleus. A few sections show simple twinning, while some exhibit parallel growth as well (see Plate 18, Fig. 17).

Another mineral with pale yellow colour, double prismatic cleavage crossing at nearly right angles, gave extinction angles of 45° on *a* (100) and 31° on *b* (010). The polarisation colours were of the fourth order. All these characters suggest that the mineral is babingtonite. The writer has already observed this mineral in copper slags.[2] It has also been recorded from Bessemer Slag at Hoerde.[3] As remarked above, magnetite, with all sorts of peculiar groupings and arborescent growths, (see Plate 19, Figs. *a–i.*) is seen filling both the interspaces and the interior of crystals of other minerals. Some glass of a dark brown colour is also seen in the section. It

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[1] These numbers refer to the register numbers of the specimens and micro.-sections of the Popa collection, preserved in the Department of Geology, University College, Rangoon.

[2] Chhibber, H. L., Microscopic Study of the Old Copper Slags at Amba Mata and Kumbaria, Danta State, North Gujarat, *Journ. Asiat. Soc. Bengal*, N.S., Vol. XX, 1924.

[3] Iddings, J. P., *Rock Minerals*, p. 344.

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appears yellowish brown by reflected light. It is noteworthy that the quartz grains caught up by the molten slag show a hexagonal outline with "reaction rims," which appear whitish by reflected light and may represent fused amorphous silica.

The thin section P/332 is seen to consist of fayalite, fantastic growths of magnetite and a little glass. Arborescent (especially resembling fir trees), cross-shaped, feathery, rod-like, and rosette-shaped groupings of magnetite are profusely distributed in the section (see Plate 16, Figs. 1 and 2). Skeletal growths and branching arborescent, feathery and acicular crystallites and microlites of fayalite are also observed in several microsections of these slags (see Plates 17 and 18). These arborescent or feathery skeletal growths are formed when crystallisation occurs from a labile solution and, on account of very rapid cooling, there is not enough time for the formation of well-developed crystals. Tutton has illustrated the formation of similar branching arborescent or feathery crystals of potassium bichromate and ammonium chloride by spontaneous crystallisation from labile solutions of these substances (*vide Natural History of Crystals*, Plate XII, Fig. 49 and Plate XIII, Fig. 50). Some of the branches of magnetite and fayalite skeletal crystals coincide with the cubic and orthorhombic axes respectively, showing that first the skeletal structural development of the crystal takes place, tending to form a skeleton-like "space lattice" (see Plates 18 and 19). If circumstances permit, the skeleton is filled up and the structure of the crystal is completed. This fact has also been recorded by Professor Tshernoff[1] in the following words: "When studying under the microscope with high magnification the formation of salt crystals as they separate from their solutions, we note that the growth of crystals from certain nuclei manifests itself in a rapid, nearly simultaneous appearance of axes, branches and even planes, starting in definite directions in accordance with the crystallographic axes of growing crystals. From the principal axes will branch off axes of the first order; from these, axes of the second order and so on. This takes place in such rapid succession that it is impossible to trace the formation of every branch. The rapidly forming branches thicken and elongate and as a result meet neighbouring branches and grow together." Similar skeletal forms are also commonly observed in the crystallisation of metals. Some of the branches of magnetite are frequently terminated by small octahedral and perfect cubic crystals. The same phenomenon has also been observed by Tutton in the spontaneous crystallisation of ammonium chloride, which also crystallises in the cubic system. It is due to rapid growth having been succeeded by final

[1] Belaiew, N. T., *Crystallisation of Metals*, p. 40.

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slow crystallisation when the solution had discharged its labile excess and attained once more metastable conditions, as has been suggested by the same author in the reference cited above. It would appear, therefore, that these artificial melts as well as the natural magmas act in the same way as saturated salt solutions.

Besides these minerals, both orthorhombic and monoclinic pyroxenes seem to be present, as certain bands show yellow and grey polarisation colours, in some cases the extinction being straight, while in others it is oblique. Double cleavage is also seen crossing nearly at right angles.

Under the microscope the section P/323 (see Plate 15, Fig. 2) shows the coarsest grain of all and consists almost entirely of fayalite of yellowish green colour. The interspaces are filled with greenish brown glass which appears whitish by reflected light.

A few extraneous minerals are also seen which were enclosed within the slags when the molten material was thrown over the Irrawaddian sands. These minerals are mostly quartz and felspar. These have in places retained their original characters, but in others they appear to have been fused and rendered isotropic and glass has found its way into the interior of the crystals, probably along the solution planes.

The formation of such well-developed crystals of fayalite set up in a glassy or partly glassy base is very remarkable and reminds one of the phenocrysts that occur in igneous rocks. It appears to the author that the ordinary explanation of phenocrysts postulating two stages of crystallisation and implying a sharp line of demarcation between an earlier and later period of crystallisation is no longer tenable. In this case the slag cooled rapidly on the surface and there were certainly no two phases of crystallisation. It appears to the author that the formation of phenocrysts and groundmass is only a matter of degree of undercooling. It has been shown by Tammann [1] that the velocity of crystallisation increases with the degree of undercooling, reaches a maximum, and with great undercooling diminishes. The decrease can go so far that the velocity of crystallisation sinks practically to nothing, so that the undercooled liquid loses its capacity of crystallisation and remains of a glassy character. The melt, which is comparable with lavas and other allied magmas, was thrown out of the furnace at a very high temperature; then rapid cooling must have increased the velocity of crystallisation and, owing to consequent super-saturation, spontaneous crystallisation must have occurred, resulting in the formation of big, well developed crystals. Finally the temperature fell so low that the velocity of crystallisation was reduced to practically nothing and con-

[1] Nernst, W., *Theoretical Chemistry*, 1911, p. 94.

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sequently the molecular movement was arrested and the rest of the material consolidated as glass.

The exclusively coarse development of fayalite in this section without even magnetite is noteworthy and it deserves the name of "fayalite-slag." Claasen[1] has described a slag consisting almost wholly of fayalite and the author believes that this may be another similar instance. This mineral has been often found in blast furnace slags. The author is inclined to think that this is the most common mineral in iron-slags as he has also observed this mineral in some other old iron-slags where adequate evidence of the employment of a blast is not forthcoming.

It has been observed above that quartz was the gangue mineral and hematite formed largely the ore-material with a little associated psilomelane. These on fusion have resulted in the formation of magnetite, fayalite, babingtonite, glass, etc.

The mineralogical changes, therefore, can be expressed as follows :—

Quartz + Hematite + a little Psilomelane $\longrightarrow$
SiO_2 Fe_2O_3 MnO_2
Magnetite + Fayalite + Babingtonite + glass, etc.
$FeO.Fe_2O_3$ Fe_2SiO_4 $(Ca,Fe,Mn)SiO_3$, $Fe_2(SiO_3)_3$.

The order of crystallisation which can be ascertained under the microscope is magnetite, fayalite, pyroxenes, etc. Ferric oxide combined with silica to form fayalite and the excess of the former crystallised as magnetite. Then the mother liquor became richer in Ca, Fe, and Mn, which united with silica to form babingtonite and other pyroxenes.

The investigation was carried on under the auspices of the University of Rangoon and the author wishes to thank that body for financial assistance given towards the laboratory work of this paper.

Summary and Conclusions.

Numerous iron-slag heaps and deserted furnaces were noted during investigation of the geology of Mount Popa. As recorded by Bell legend connects the earliest history of the extinct smelting industry in Burma with Mount Popa. The ore used comprised hollow or solid ferruginous concretions in the Irrawaddy series (late Tertiary). The concretions are irregular but roughly discoidal and vary in size from one inch to three inches in length; with occasionally larger ones up to eight inches or a foot in length. Bands of ferruginous conglomerate are often associated with these concretions. The presence of silicified wood and curiously shaped calcareous and siliceous concretions in the Irrawaddian affords further evidence of the

[1] *Journ. Iron and Steel Inst.*, No. II, 1886, p. 915.

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activity of various types of mineralising solutions through the sands.

These concretions consists both of hematite and limonite. Both crystalline and amorphous forms of hematite are present. Sometimes bands of limonite and hematite show wonderful gradations. A little psilomelane is also present as the presence of manganese in amorphous botryoidal form has been confirmed chemically. The concentric banded structure is distinctly visible in most of the specimens and may be due to colloidal origin; the different bands then indicate rhythmic deposition of iron oxides from colloidal solution forming the so-called *Liesegang* rings. The presence of fossil wood of siliceous, calcareous and ferruginous composition lends support to the supposition. The following dehydration sequence worked out by Cornu is supported by field-evidence as the author has specimens which show every degree of dehydration.

Limonite : Hydrohematite : Hematite.

It is legitimate to attribute a colloidal origin to the concretions composed of crystalline material, as it has been shown by Doelter that colloids may be transformed into crystalloids under suitable conditions. It is possible that the matrix of these ferruginous conglomerates is also of colloidal origin as gels of ferric oxide play an important rôle as binding materials. The structure of these concretions resembles that seen in oolitic and pisolitic grains, but is on a much larger scale and has been designated "torolitic." Torolite is thus used for a rock consisting of pillow-shaped masses with a concentric structure identical in appearance and origin with pisolite, but on a much larger scale.

The localisation of these concretions may have been caused by the presence of nuclei of clay, as kernels of altered clay are seen inside the hollow concretions; probably physical affinity exists between colloidal clay and colloidal ferric oxide.

The extent of the iron smelting industry in the past can be judged by the widespread occurrence of the slag-heaps and furnaces which were deserted about forty years ago. The furnaces and simple methods of extraction have been described. No flux was employed and the fuel used was charcoal.

Megascopically the slag is greyish to iron-black in colour. The average specific gravity is 4·01 and the hardness is 5-5.5. It gelatinises very strongly with concentrated hydrochloric acid and is magnetic.

Under the microscope thin sections are seen to consist of fayalite, babingtonite and magnetite with glass. Both fayalite and magnetite show arborescent, feathery and variously shaped skeletal growths, which have been formed on account of rapid crystallisation from a labile solution. Some of these

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branches of magnetite and fayalite coincide with their principal axes showing that the skeletal structural development of the crystal takes place first tending to form a skeleton-like "space-lattice." Some of the branches of magnetite are frequently terminated by small octahedral and cubic crystals. This is due to the solution attaining metastable conditions, having discharged its labile excess. It appears, therefore, that these artificial melts as well as the natural magmas act in the same way as saturated solutions.

Very well-developed crystals of fayalite have been observed which are comparable to the phenocrysts of igneous rocks. The ordinary explanation of phenocrysts attributing them to two stages can no longer be tenable in face of this evidence. It is only a matter of degree of undercooling. As shown by Tammann, on account of rapid undercooling the velocity of crystallisation is increased, which results in spontaneous crystallisation of well-developed crystals from a labile solution. Finally the velocity of crystallisation is reduced to nothing on account of very low temperature, and glass is formed.

The exclusive development of fayalite suggests the name of fayalite slag.

The order of crystallisation is magnetite, fayalite, pyroxene, etc.

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EXPLANATION OF PLATES.

Plate 12.

Fig. 1. Showing concentric banded structure in a ferruginous "torolite." The portion marked with + is of limonite and the rest of it consists of hematite, except on the border, which again is of limonite.
Fig. 2. Showing concentric banded structure in a limonitic "torolite."

Plate 13.

Fig. 1. Showing fantastic shapes of hollow ferruginous concretions.
Fig. 2. Showing the interior of hollow concretions roughened with grains of sand, after removing the kernel of clay.

Plate 14.

Showing deserted iron-furnaces, near Thanbo, with slag-heaps in the foreground.

Plate 15.

Fig. 1. Sketch showing vertical section of an iron-furnace.
Fig. 2. Showing well-developed crystals of fayalite with glass. The white area towards the bottom consists of felspar mostly, with a little quartz.
Fig. 3. Crystals of fayalite showing bands of glass intercalated in them.

Plate 16.

Showing fantastic, branching arborescent or skeletal growths of magnetite set up in fayalite and a little glass.

Plate 17.

Showing skeletal and feathery growths of fayalite. They are seen radiating from a common centre in Fig. 1.

Plate 18.

Showing skeletal growths of fayalite, filled with glass or magnetite. In Fig. 19, bands of glass are seen intercalated sometimes parallel to the faces of the crystals. Fig. 17 shows parallel growths of fayalite crystals. Figs. 13, 14, 15, and 20 show the tendency towards the development of the crystal axes first and subsidiary branches subsequently, forming a skeleton-like "space-lattice."

Plate 19.

Showing skeletal growths of magnetite. Figs. *a*, *g*, *h*, and *i* indicate the structural development of the axes first, the branches of secondary axes subsequently forming a skeletal "space-lattice."

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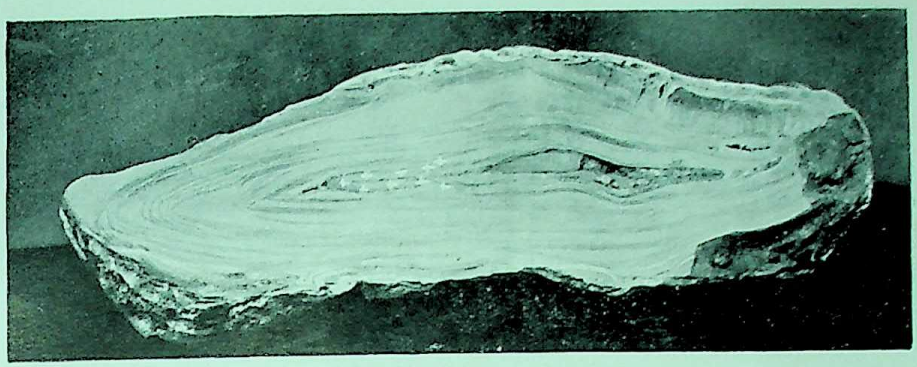

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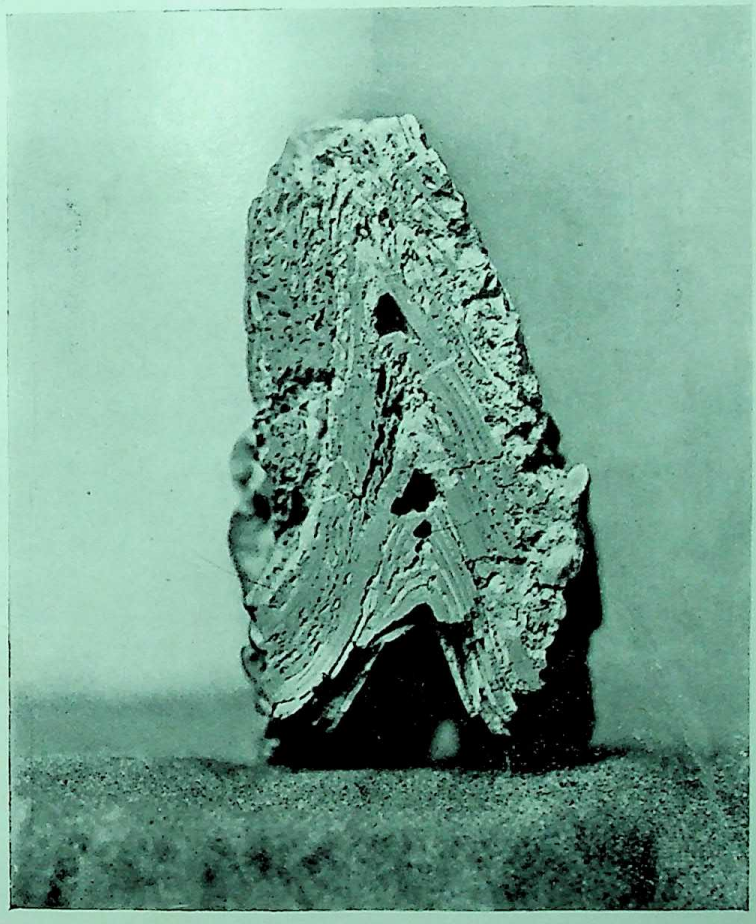

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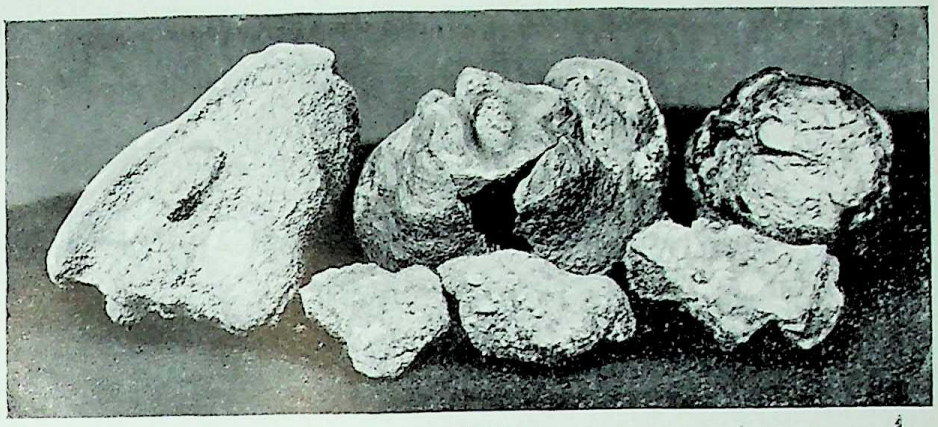

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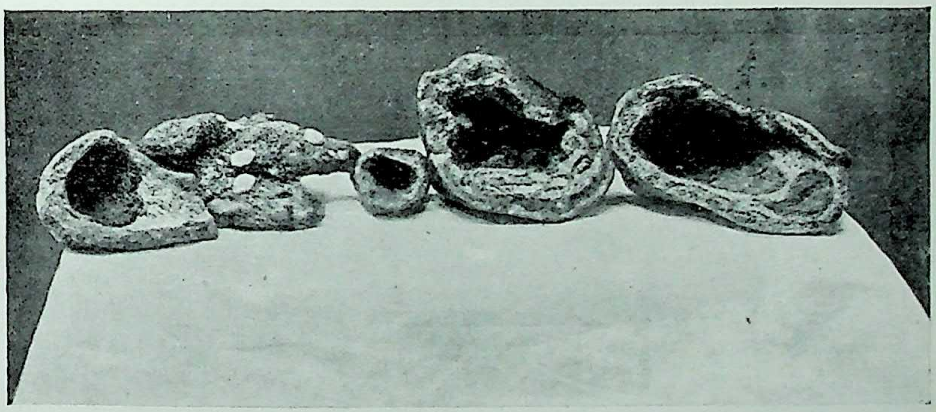

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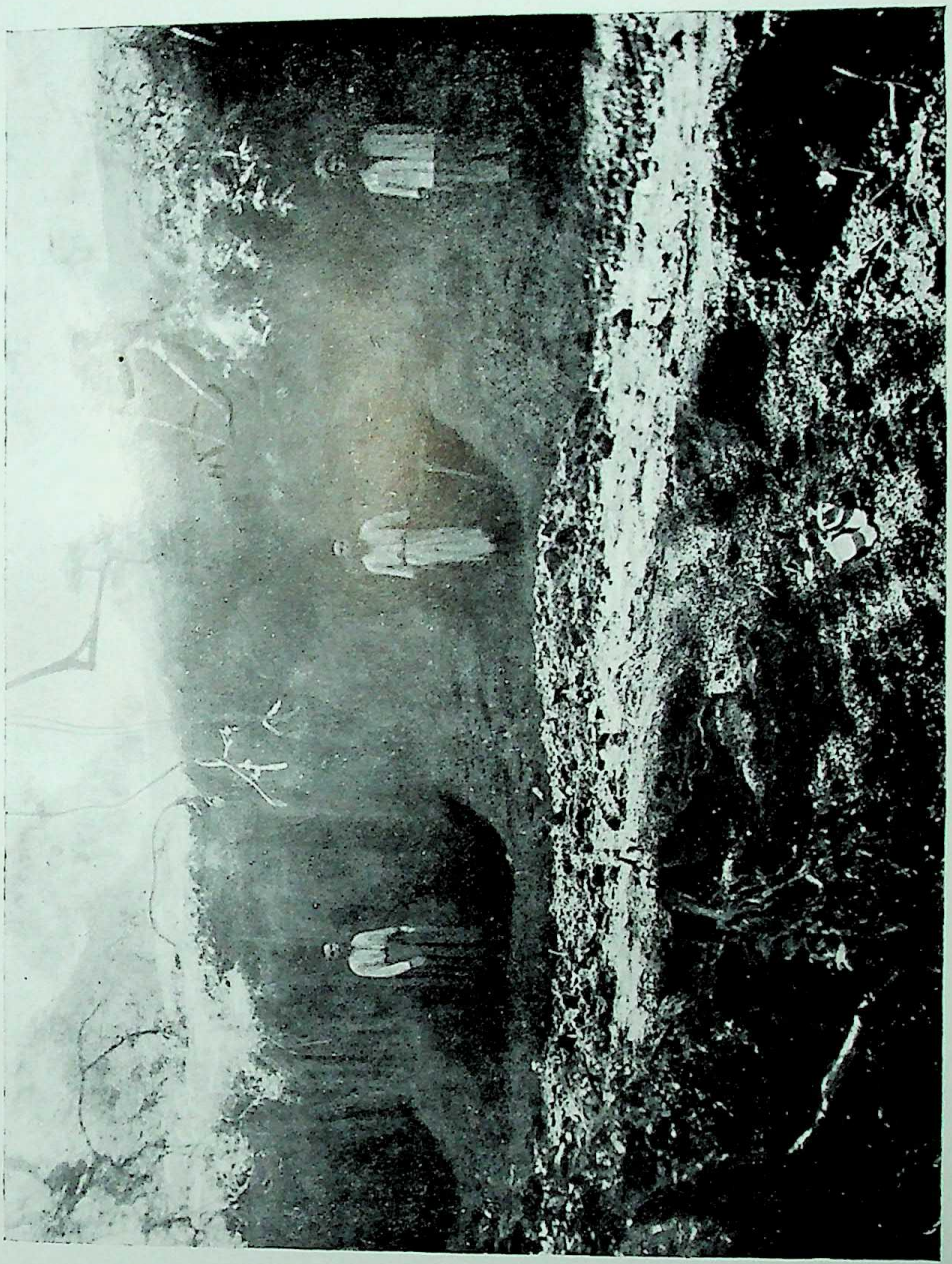

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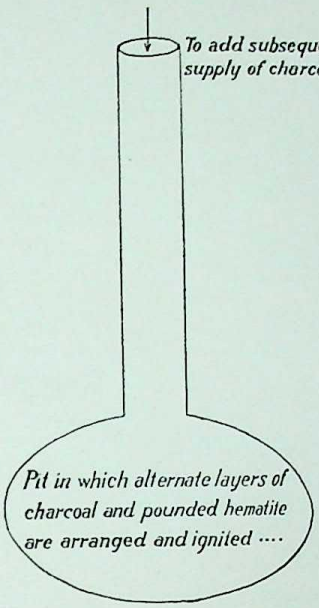

VERTICAL SECTION.

Scale 3″=1′.

FIG. 1.

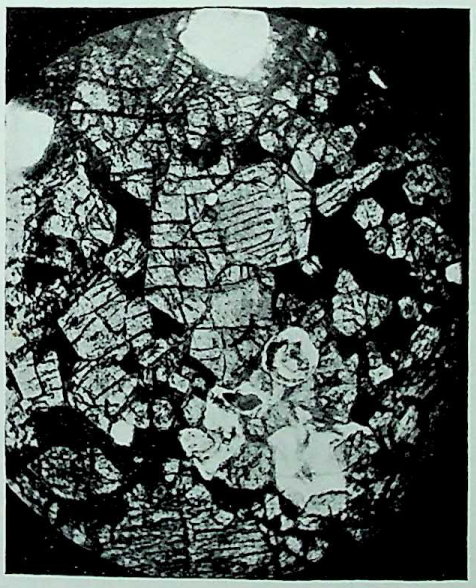

FIG. 2.

FIG. 3.

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FIG. 1.

FIG. 2.

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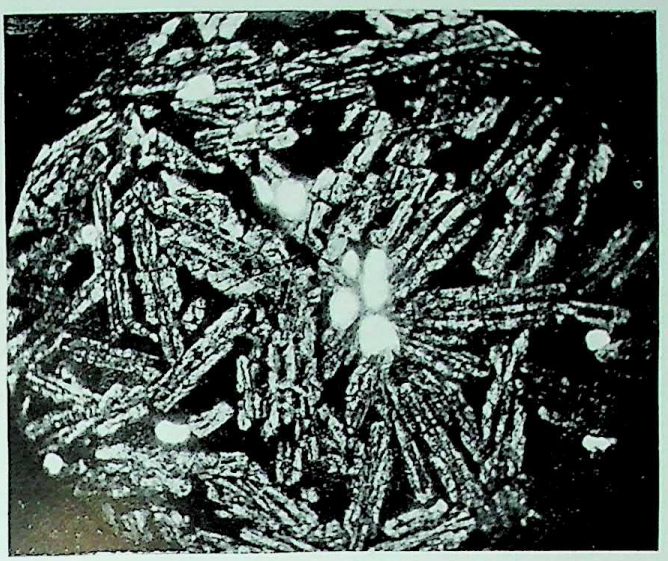

FIG. 1.

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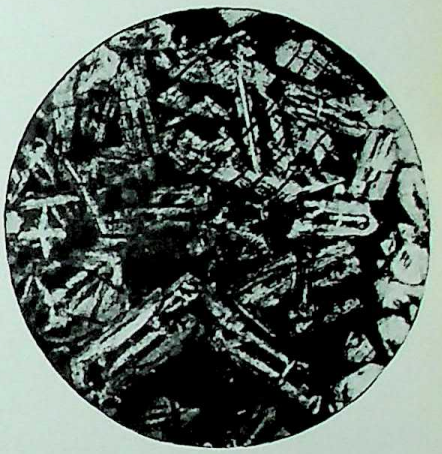

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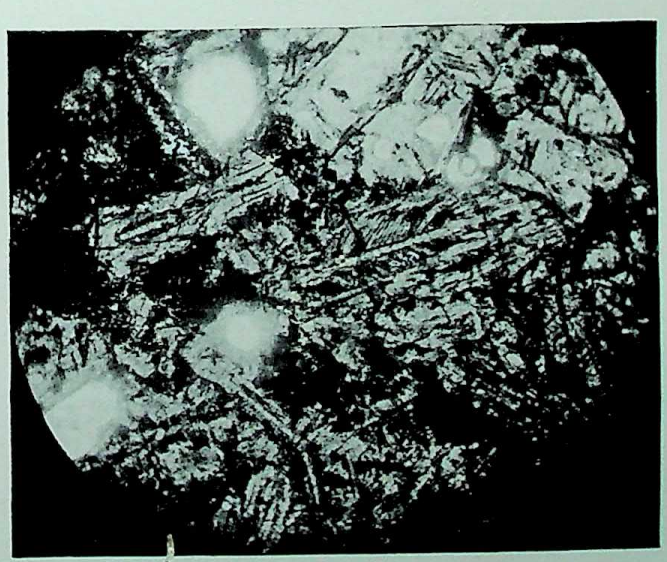

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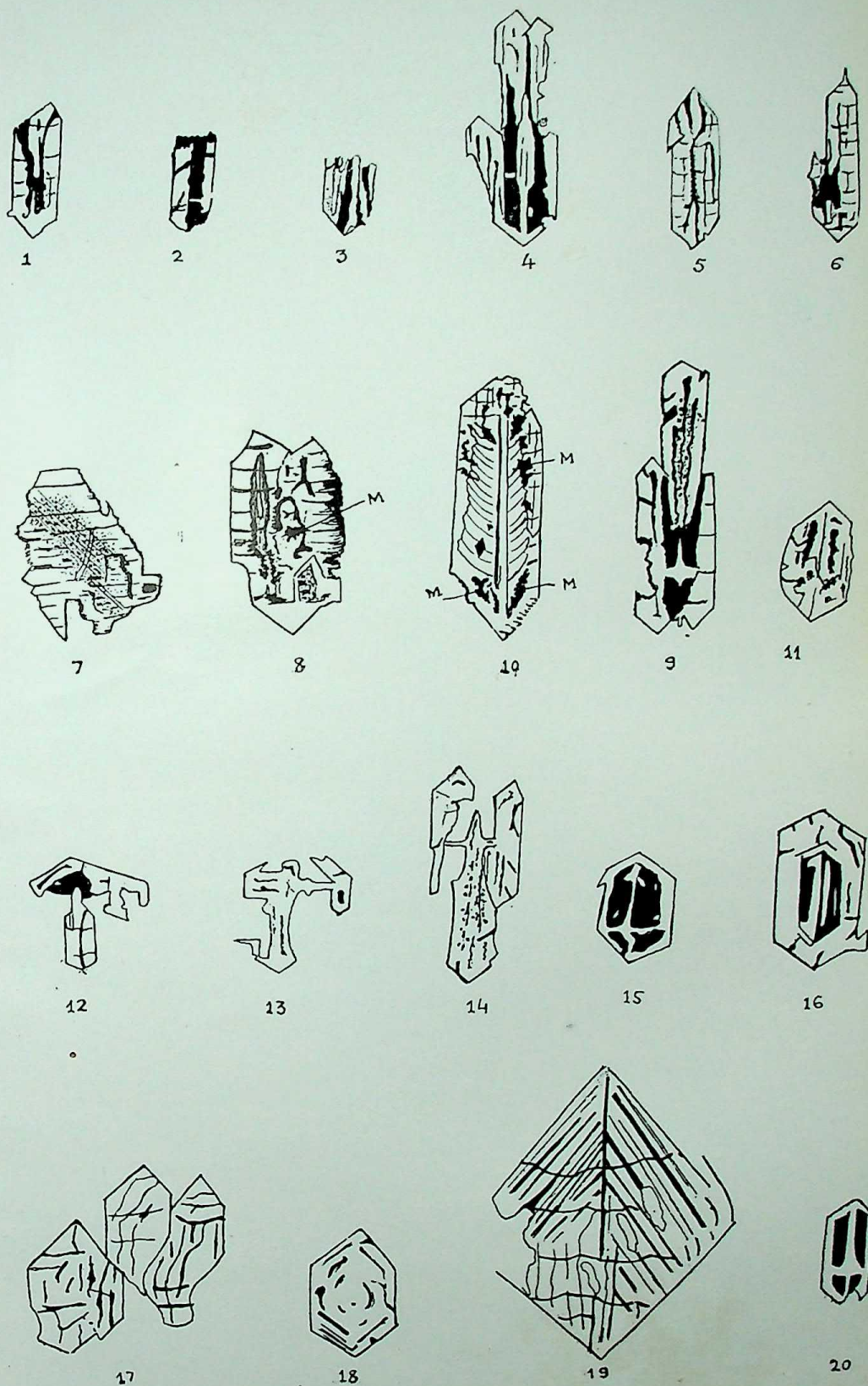

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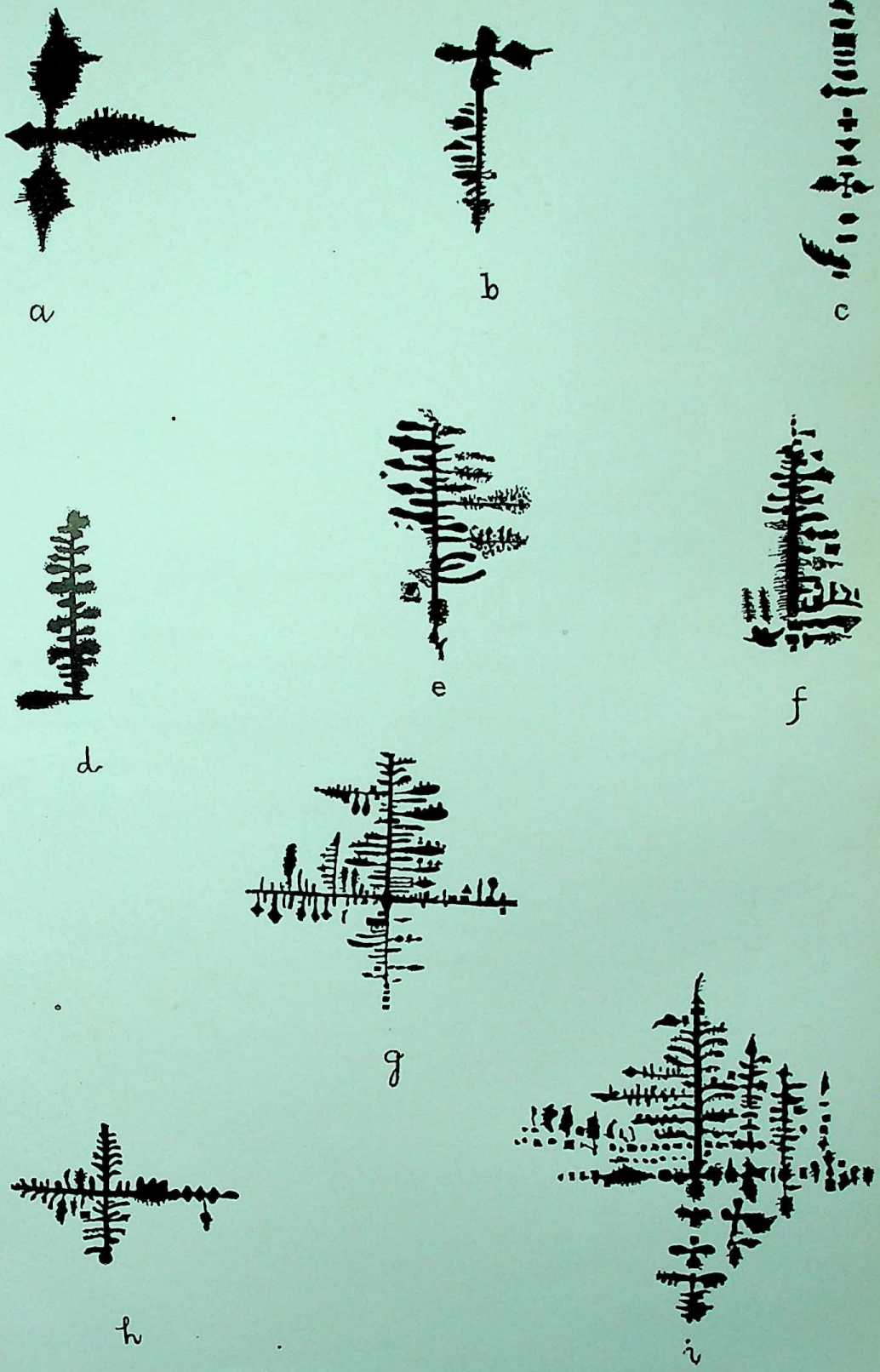

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Folk Stories in Lhota Naga.

(Text with interlinear and running translations.)

By J. P. MILLS, I.C.S.

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INTRODUCTION.

While working on the ethnography of the Lhota Nagas I realized how scanty had been the attention hitherto paid to their language. The only existing grammar was that of Dr. Witter of the American Baptist Missionary Society, and this was not altogether satisfactory. The few little books of religious instruction were admittedly incomprehensible in places to the Lhotas for whom they were written. Clearly a fresh study of the language was called for, and I determined to attempt to combine with a record of their folklore a record of the language as actually spoken which might be of interest to philologists, and upon which a simple and consistently spelt written language might some day be founded.

I had on my staff a literate Lhota named Tsansao, whose assistance was absolutely invaluable and to whom my heartiest thanks are due. My method was entirely my own and for its defects I am solely responsible. It was as follows. Some Lhota, whose knowledge of folklore was known to be accurate and who spoke the Liye (Northern) dialect which Tsansao spoke, would offer to tell a story. We would listen to him. Then I would cause Tsansao to take it down word for word, a task I could not do myself, for no one but a Lhota could deal with the repetitions and omissions of one of his own tribe attempting to dictate for the first time in his life. The story was then read over carefully several times to the teller to make sure that his version had been accurately recorded. The next stage was to read it over to two or three old men and obtain their confirmation that the story had been told in a manner which accorded strictly with sound tradition. The folklore having been voted accurate we turned our attention to language and spelling. A simple phonetic system was used, without elaborate diacritical marks which would only be dropped in the hurry of everyday use if a written language grew up. I had each sentence pronounced very slowly and distinctly, and rewrote it with care. Then I made sure that I had cut it up into words properly—a very difficult task in a language where suffixes and compounds abound. I kept a small word list in which every word was entered, and against which every word was checked at each recurrence to ensure that the spelling was kept consistent. On a fair copy of each story an interlinear word for word translation was added, with each English word below its Lhota equivalent. Finally a running translation was made. The result is a small collection of specimens of modern Liye Lhota, which not only, I trust, show the structure of the language as actually spoken with its long and characteristic participial clauses, in a way no lists of artificial sentences could illustrate, but also reveal something of the mode of thought and traditions of those who use it.

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1. THE WAX GIRL.

Eran-na Nungkamchung-o vana-thang eloe nchyua
Ancestors Nungkamchung-at remaining-time woman a
Yensali etsai Ezung-pfui vancho; hochi era loroe. Hochi
Yensali called Ezung-woman was; she wax girl. Her
opoyang-na n-soa vantok to tyutala.
parents not-marrying causing to remain indeed say.
Tsontsotsü-na ntila n-wotok to eloe-chi
Tsontsotsü anywhere (will) not-allow to go thus woman's-the
opoyang ezosi soa vancho. Osi ntila
(to) parents having said marrying remained. But anywhere
n-wotoko vantokcho. Onpoi ki-cho oyan
not-allowing to go caused to remain. Couple's house-the village
li-lan nthango tssocho sakama oyamo-chiang-na li-lan
field-path near was because villagers-the field-path
sana yia-thang-ha na li-lan sana woa-thang-
all using coming-time-both and field-path all using going-time-
ha to Tsontsotsüang onpoi li mhonkana to
too indeed (the) Tsontsotsüs couple's fields very good thus
tai tyuta sampicho. Ole Yensali-na hochi zoiki
only saying walked. Then Yensali this hearing
orapvü-chi "E-ni ha ochö oli ze-lo wotaka"
(to) husband-the "We-two also tomorrow field see-to will go"
to ezosi ochö to oli ze-lo wotacho.
thus having said next day indeed field see-to went.
Chisicho Tsontsotsü-na oli-na owo eng-chi "Nno
Then Tsontsotsü field-to going (to) wife-the "You
san-cho-lan tonga chowo lung-
always using-going down-path going straight going down rock-
pi-chi-na oli chani zesi chongi li-ki-
flat top-that-from field viewing having seen going up field-house-
na vana" to ezosi mbo-na li-tsa thrua
in remain" thus having said he field-edge going round
oli-chi zeta chowosi chongi zele eng-
field-the seeing having gone down coming up when saw wife-
cho lung-pi-lo tyunkai sitakcho. Chisicho
the rock-flat top-on having melted away perished. Then
Tsontsotsü-na oyan-i oyi om-chi
Tsontsotsü village-to going (to) wife's father-the

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"A-m, i-tsolo-cho lung-pi-lo
"My-wife's father, your-daughter-the rock-flat top-on
tyunkai sitaka" to ezole om-na
having melted away has perished" thus when said wife's father
"Nua mbo pipo-samlo-chiang tsam-n-tsamphila?"
"You her ornaments-clothes-the touched-not-touched?"
to engale Tsontsotsü-na "N-tsamphika,
thus when asked Tsontsotsü "Not-have touched,
a-m" to ezocho. Tole om-na "Toka
my-wife's father" thus said. Then wife's father "Then
ochö ha eng-ya-thang owo nshi-wo-ki
tomorrow even sun-rising-time going *nshi*-leaves-with
ekhab-kasi zeta vanke" to ezocho. Ole
picking-having covered watching remain" thus said. Then
Tsontsotsü-na nshi-wo-ki ekhab-kasi zeta
Tsontsotsü *nshi*-leaves-with picking-having covered watching
vanle chi-thang otsak thrua oro soyingiki
when remained that-time bees swarming come having begun
nchörang koto vancho san hoto kamiki otsan
before as was thus so (she) having become hair
echekpya vancho orapvü-na sosi yicho. Chitosicho
smoothing was husband taking (her) went. After this
eng-chi ntila n-wotoko oki kham-cho-i tai
wife-the anywhere not-allowing to go home shade-the-in only
vantokcho. Chisilocho oni-na otsoi epue nchyueni
made to remain. After this they two children male two
pokcho; ole eramo-chicho Champomung tsa na okhawo-
got; then elder-the Champomung called and younger-
chicho Shishanga tsa to tssocho. Tsontsotsü-na champo-
the Shishanga called thus became. Tsontsotsü-by *morung-*
i tai munga shishang-cho tssoko-na eramo-chi
in only sitting *shishang* ceremony-the being-because elder-the
Champomung tsa na okhawo-chi Shishanga tsa to
Champomung called and younger-the Shishanga called thus
tssocho. Hochi tssoko-na nhungacha Champomung
became. This being-because till now Champomung's
tsoronichen-cho Champomungdri echan na Shishanga
descendants-the Champomungdri are called and Shishanga's
tsoronichen-cho Shishangdri to echanala. Motsü-shi nhunga
descendants-the Shishangdri thus are called. Story-this now
tsoren tiing aria tsso.
generations seven so much happened.

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In the days when our ancestors lived at Nungkamchung[1] there was a girl of the Ezung clan whose name was Yensali. And she was a wax girl. Her parents did not wish to marry her to anyone, but Tsontsotsü promised never to let her go out in the sun anywhere so her parents gave her to him in marriage. And he was careful to keep his promise. Now he built his house near the path which the villagers used going to and from their fields, and as the villagers went to and from their fields they kept saying, as they passed the house, how good Tsontsotsü's fields were. Because she always heard this said Yensali said to her husband "We will go together and see the fields to-morrow." So the next day they went, and when they reached the field Tsontsotsü said to his wife "You go down the track and look at the field from that big rock there. Then go up to the field-house and wait there." And she went down along the edge of the field and got up onto the big rock to look. But when she got onto the rock she melted right away. Then Tsontsotsü went up to the village and said to his father-in-law "Your daughter has melted away on the big rock." Then his father-in-law asked him whether he had touched her clothes and ornaments, and when Tsontsotsü said he had not, he said "Go down early to-morrow morning and sprinkle *nshi* leaves on the place." So Tsontsotsü went and sprinkled *nshi* leaves over his wife's remains and a swarm of bees appeared and turned into his wife as she was before. And she brushed her hair back with her hand and went home with her husband.

After this he never let her go anywhere, but always made her stay in the shade of the house. And in due time two sons were born to them. The elder was called Champomung and the younger was called Shishanga. They were so called because Tsontsotsü spent all his time in the *morung* (*champo*) and because he did the Shishang ceremony. That is why to this day the descendants of Champomung are called Champomungdri and the descendants of Shishanga are called Shishangdri. This is a story of what happened about seven generations ago.

2. THE STORY OF HUMCHIBILIO.

Onche-ni eramo-chi-na okhawo-chi nti
(Of) brothers-two elder-the younger-the anything
nti-na n-chocho. Eramo-chicho omholi mhon mhon
anything-by not-did excel. Elder-the fields well well

[1] The oldest Lhota village, from which all other Lhota villages are believed to have sprung. For some unknown reason it has dwindled greatly of recent years and became extinct while I was in the Naga Hills.

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chon-na m-mhom chonche na eloe ha mhon mhon
cultivates-if not-well cultivating and girl too good good

tai soa va-na m-mhom kam to tssocho.
only marrying kept-if not-good turning into thus became.

Osi nchokacho onche-ni owo oli chhani
But one day (the) brothers-two going fields from fari

zetasi okhawo-chi 'li mhom-ochi eramo-ch
having examined younger's-the field good-the (to) elder-the

pi eramo-chi 'li m-mhom-ochi okhawo-chi pi
giving elder's-the field not-good-the (to) younger-the giving

to oni tongtacho. Ole eramo-chicho oli mhom-
thus they-two exchanged. Then (to) elder-the field good-

ochi piala m-mhom kam na okhawo-chicho oli
the giving not-good turning into and (to) younger-the field

m-mhom-chi mhona kam to tssocho. Chitosicho
not good-the good turning into thus became. After this

eramo-chi-na ongo eng mhomo-chi soa
elder-the younger brother's wife good-the marrying

vam kilato nchama ongo
would keep intending thinking (his) younger brother

etchüthechi-lo ora-i hono-hambong hantasi wotacho.
deceive-to jungle-in fowl-cock taking (they) went off.

Osi ota-na ongo-chi etchüthechi-lo
But elder brother-the younger brother-the deceive-to

owo "A-ngo, nno meta-shi tsi-n-tsi
going "My-younger brother, you place-this know-not-know

tsi-n-tsi?" to sopiya ezole ongo-na
know-not-know?" thus taking when said (the) younger brother

"A-ta, shicho a-po e-ni
"My-elder brother, this my-father we-two

tsang-wo-pen, shicho chungra tong-pen,
(wood) to cut-going-place, this bird trap setting-place,

shicho tsirhi tong-pen, shicho yanyo-pen
this rat trap setting-place, this searching-place

na shicho tyoka-pen to ezokhancho. Tole
and this fishing-place thus kept on saying. Then

ota-na ongo-chi tampoe
(the) elder brother younger brother-the (to) another place

soa owo lungrhen-pang-i "A-ngo, shicho
taking going cliff-top-at "My-younger brother, this

tsi-n-tsi?" to ezole ongo-na
know-not-know?" thus when said (the) younger brother

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"A-ta, shicho n-tsi" to ezocho.
"My-elder brother, this (I) not-do know" thus said.

Chisicho ota-na "A-ngo, shi-lo
Then (the) elder brother "My-younger brother, this-at

yiptaka" to ezoa chi-lo-na tsantyani
(we) will sleep" thus saying that-at-in (a) meal

tsotasi sheyu-tong echoi chi-lo
having eaten (a) plantain-tree having cut and trimmed it-on

ossü epfukai va na hono-hambong-chi ha
cloth having wrapped putting and fowl-cock-the too

oni khamki va tosi ota-cho
they two at the head of placing having put elder brother-the

sheyu-chiwo yip na ongo-cho
plaintain tree-by the side of sleeping and younger brother-the

mbo —chiwo-i yiptok to tssocho. Tole
him —by the side of-at making to sleep thus became. Then

ota-na ongo yipthetoksi
(the) elder brother (the) younger brother having let get well asleep

mphoa tsancho. Chicho hono-chi-na
concealing (the fact) escaped. Then fowl-the

"kukuriaku, i-ta tsantaka,
"cock-a-doodle-do, your-elder brother has escaped,

kukuriaku, i-ta-na i-mphoa
cock-a-doodle-do, your-elder brother (from) you-concealing

yitaka" to khule ongo-na panthiki
has gone" thus when called (the) younger brother getting up

ota tsaya sheyu-lo ossü
(his) elder brother thinking it was plantain tree-on cloth

epfukai evao-chi "A-ta, hono khuala;
wrapping put-the "My-elder brother, (the) fowl is calling;

wonchiala; panthia" to ezoa chepile
it is getting light; get up" thus saying when pushed

lungrhen-chi eria choicho. Ole mbo-na "A-ta
cliff-the rolling fell down. Then he "My-elder brother

eriala, a-ta eriala" to tyua phana
is rolling, my-elder brother is rolling" thus saying chasing

cho-wo zele sheyu-chi sakama
down-going when saw plantain tree-the because (it) was

echoroi sisi ota
cutting into small pieces having thrown away (his) elder brother

tsa "E-ni nlhancha-na tsangon-hambong sailika;;
calling "Our-two spittle-with sunbird-cock is caught;

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e-ni chitaka a-nhyaka" to thanga phanala n-phayacho.
we-two will share me-await" thus calling chases not-did catch.

Osi ota-na chi zoiki mbo 'sü
But (the) elder brother that hearing his track

n-drruchetoko kilato mbo sü-chiang na mbo
not-would allow to follow intending his tracks-the and his

ncha mpato yontsi-na lenroi vaisi
spittle too spear butt-with scratching over having kept

"Hepina yiaka; roke" to ezoa yicho.
"This way (I) am going; come" thus saying went.

Ongo-chi mbo n-phayao milani-ti oyi
Younger brother-the him not-catching evening-at coming

zowoti lamalo ethi licho chi-lo chungo tsanka-i yipcho.
zowoti fruit many growing was it-in climbing top-at slept.

Tole zowoti-chiang chi-zamo-tai mhenkhani-chiang
Then *zowoti* fruit-the that-night-only ripened-the

hloi tsoa vancho. Ole mharr-na sepu rhamiki
picking eating remained. Then (a) tiger sambhur having caught

nhyanchap-na onhyan tsso seno-na echan
cobra-from carrying band becoming barking deer-from back

ela na nipong-na kurri ela to tssosi
pad and wild boar-from head pad thus having become

tsopelak tsanglapkakana süsi nlapiya
long bladed spear very bright having carried flourishing

"Tsong-rong, tsong-rong" to khua oyi zowoti-tong-
"Ho-ho, ho-ho" thus calling coming *zowoti*-tree-

chi chanale "Ekam-ramdhram tssoa" to tyua
the when reached "Live-scent becomes" thus saying

zekachicho. Ole kyon-chi-na "A-motzü, a-
looked up. Then man-the "My-grandfather, my-

motzü, oyam-na i-tsangthi-shi hlokato
grandfather, some one else your-fruit-this in case should pick

a-na i-nhyakia vanaka" to ezocho. Chitosi
I you-awaiting have remained" thus said. Then

kyon-chi-na zowoti-chiang hlo-hloi tsotoksi
man-the *zowoti* fruit-the pick-picking having given to eat

nnyo-i ntsangatai tssoale "A-motzü, nhungo
top-at one only when became "My-grandfather, now

a-na n-yonchanka i-tsopelak a-pikachia
I not-can reach your-long bladed spear (to) me-hand up

nnyo-i-chi elang-chochi i-tsotokoka" to ezoa
top-at-the cut off-the you-will give to eat" thus saying

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mbo pikachitokcho. "Osi nko setya opang
him made to hand up. "But legs spreading apart mouth
khu na omyek chok tosi vanke, a-na zowoti
open and eyes shut having put remain, I *zowoti* fruit
hloi i-pang-i shamthechika" to ezocho. Ole
picking your-mouth-in will throw down" thus said. Then
mharr-chi-na kyon-chi-na ezoa to lui vancho. Ole
tiger-the man-the saying thus doing remained. Then
mbo-na shamchochia chenle n-drako
he throwing down (i.e. the spear) striking not-hitting
nko-i lentheicho. Mharr-chi-na "Acho, nno nto
feet-at struck the earth. Tiger-the "Hallo, you what
luiala?" to ezole kyon-chi-na "A-motzü,
are doing?" thus when said man-the "My-grandfather,
a-motzü, nungri kama i-tsopelak-chi
my-grandfather, boy because (I) am your-long bladed spear-the
m-penkoko nsechicho." Nhunga apikachilana
not-being able to hold it fell." Now (to) me-hand it up again
osi nthang lui vana to mhona lui vana"
but just now doing remaining thus well doing remain"
to ezocho. Mharr-chi-na kyon-chi-na ezoa to lui
thus said. Tiger-the man-the saying thus doing
vanle shamchochia opang-i-na
remaining (the man) throwing mouth-in-from
songdra chentsangcho. Tole kyon-chi-na
spearing through pierced. Then man-the
mharr-chi tchhitchhianato zowo-yo-chiang
tiger-the was dead or not (to test) *zowoti*-leaves-the
ntonchochia vanle ntchhio
picking and throwing down while was remaining not-being dead
enno-chi elhampia vancho. Osi okaiti zowo-yo ntsanga
ears-the moving remained. But at last *zowoti*-leaf one
tai enhyui-chi ntonchochile enno-chi
only remaining-the when picked and threw down ears-the
n-lhampio tchhicho. Ole kyon-chi-na choi mharr-chi
not-moving was dead. Then man-the descending tiger-the
woni hansi mharr-chi-na nyana to
going having carried tiger-the-because of chanting thus
nyana oyi tchhüka ntsanga chancho. Ole
chanting coming (village-) spring a reached. Then
tchhüka-chi-lo loroe orotsakatara vancho. Mbo-na loroe-
spring-the-at girls washing remained. He girls-

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chiang-kholo nchyua mhom hüngi hochi lamma
the-among one beautiful seeing that one desiring

tsopelak-chi tchhüka nkho-lo "tong-tonga"
long bladed spear-the spring fence-at "ping-ping"

lenkasi mbo cha-chü-küpi mphoi vancho.
having thrown himself worm-cast-behind hiding remained.

Ole loroe-chiang-na ekhentsangra chungi oyamo ezocho
Then girls-the fearing going up villagers told.

Oyam-chiang-na choro "Shio ocho-na ato?" to
Villagers-the coming down "This who (did) thus?" thus

tyuta tsangpitala n-tsangchecho. Ole mbo-na "Hi-hi,
saying pulling not-pulled out. Then he "Ha, ha,

chi-tia m-phechikoktaka. Nte-na shi-lo chorotsakao
that-even not-can pull out. You this-at bathing

loroe mhom-ochi a-pio a-na phe to pheche nten
girl beautiful-the me-giving I pull thus pulling out you

pio" to ezocho. Oyam-chiang-na "Shia ocho-la?"
will give" thus said. Villagers-the "This who-is?"

to tyua lomo-ro mpia laplap shoisia yanala
thus saying grass-little even all scraping over search

n-yanchecho. Ole loroe mbo elamm-ochi ekyung-chi
not-did find. Then girl he desired-the (of) chief-the

tsoi sakama chi-na "Toka ocho sana phechekok-na
daughter being he "Then whoever it be can pull out-if

a-tsoi-chi i-pika; oyi phecheta" to
my-daughter-the you-will give; coming pull out" thus

ezole mbo-na cha-chü-küpi-na chui
when said he worm-cast-behind-from coming out

phechecho. Chisicho mbo-na loroe-chi soa vankato
pulled out. After that he girl-the marrying to remain

wole loroe-chi opo-na mbo loran-chicho pipo
when went girl's-the father his servant girl-the ornaments

elam to pipotoksi samsam lui
many indeed having made to put on beautiful making

vantok na otsolo-chicho chamchak-ssü-ro-na
causing to remain and daughter-the rags-clothes-small-with

lui maku-ki ntyazhua vantokcho. Toala
making husks-with sprinkling caused to remain. Yet (of)

epue-chi elam to chethang-mothang-cho sakama
man-the much indeed wiliness-cunning-the because was

otsolo chi soa vancho. Ole mbo-na eng-chi
(real) daughter-the marrying remained. Then he wife-the

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yengki-lo thei hansi oyi
carrying basket-in putting having carried coming

n-hankokale lanrhu-lo ntongi vasi
not-being able to carry cross roads-at upright having left

potsocheni tsa-lo yicho. Chisicho Humchibilio otyon
relations call-to went. Then Humchibilio ugly

m-mhom-ochi-na otchhü-lo cho-wosi hochi hüngki
not-beautiful-the water-to down-having gone this seeing

yengki-chi elhichi zesi loroe-chi süchei
basket-the opening having seen girl-the dragging out

nshioroi tchhüka tchhü-cho shamchochi
tearing in pieces spring (in) water-the throwing down

sisi mbo yengki-chi tsanthei vancho. Osi
throwing away her basket-the entering remained. But

mbo potsocheni-chiang soa yi hanai elhechei
his relations-the bringing coming carrying opening

zetasi chiang-na "Heto soa yicho
having looked they "This marrying have come

e-tsato?" to mbo emaicho. Mbo ha "A-na
us-do you call?" thus him mocked. He too "I

soa vam-ochi shi mak-la" to nchama
marrying will remain-the this not-is" thus thinking

elam to yikra vancho. Chisilocho Humchibilio-na
much indeed shame remained. After-that Humchibilio

nshioroi esi-ochi-na ewo kami
tearing in pieces threw away-the-from bamboo shoot becoming

samsam shongi lile epue-chi-na hüngi "Shicho
beautiful growing when was man-the seeing "This

nkolo etsong-i essa" to tyua phangi raki
former wife-to like" thus saying breaking off peeling

hanai chamkachele orapvü-na vana-na
bringing putting on to boil (her) husband remaining-if

"lak-lak" to elak na Humchibilio tai
"bubble-bubble" thus bubbled and Humchibilio only

tssoa-na "Humchibilio-na a-nshiorocho, lak-lak
being-if "Humchibilio me-tore in pieces, bubble-bubble

lak-lak" to tai elakcho. Chicho Humchibilio-na
bubble-bubble" thus only bubbled. Then Humchibilio

orapvü-chi "Epue, chan-shi-na heto
(to her) husband-the "Husband, vegetable-this thus

khua elakaka; enga" to ezole orapvü-na
calling out bubbled; listen" thus when said (the) husband

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enga vanle otso-tso chi to khua
listening when remained true-truly that indeed calling out

elaka sakama khantsang-i penchochi sicho.
bubbling because was back of house-at picking up threw away.

Chitosicho hochi-na nhunga kongken kami nnyo-ro-
After that she now orange tree turning into top-tree-

i-na ntsanga tai ethiki Humchibilio-na woa-na
at-from one only growing Humchibilio going-if

nnyo-i chungi na orapvü-na woa-na konga choi
top-at ascending and husband going-if bending descending

to tai tssocho. Chi ha "Shicho nkolo etsong-i
thus only become. (Of) this also "This former wife-to

essa" to tyua hloiki yenki thei vacho.
like" thus saying picking (in) basket putting kept.

Hochi-na kyon kamiki ompoi-na omholi-lo
This-from human being turning into man and wife fields-to

wotaka-na "Tyengramo-na ekhomka, trangrang" to
went-when "Wifeless man will abuse, tinkle-tinkle" thus

tai tyua yengki-na tsokchok tsokchok to tssocho.
only saying basket-from jump jumping thus became.

Osi hochi-na Humchibilio pelang-i-cho tyoka
But she Humchibilio's bed-on-the easing herself

nnyungkai kurr shaka shakai vai na orapvü
urinating ashes picking up putting and husband's

pelang-i-cho laplap pfui vai na oki ha laplap
bed-on-the much wiping keeping and house too much

khethangkheri na tsantyani vai to tssocho.
sweeping and cooking keeping thus became.

Orapvü-na oyi "Ocho-na heto lui e-vaia to?
Husband coming "Who thus doing (for) us-kept indeed?

E-na n-tso-yu-lia chi pika" to
We not-eat-drinking-even (to) that (man) will give" thus

yankho-eli enga-na chiang-na "E-ki tia
khel-men asking-if they "(In) our-house even

n-tssochoa-na ocho-na chi to nte luiala?"
not-became-if who this indeed (for) you is doing?"

to tai ezoracho. Ole nchokacho orapvü-na
thus only kept saying. Then one day (the) husband

woa etchüsi yingto oyi cheta vanle
gone deceiving quietly coming watching while remaining

nchürang tyua to tyua eloe-chi-na yengki-na
before saying indeed saying woman-the basket-from

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tsokchokcho. Tole orapvü-na "E, nno koi-na
jumped. Then (the) husband "Ho, you where-from
yichola?" to ezoa rhamacho. Tole eloe-chi-na
have come?" thus saying seized. Then woman-the
nchürang Humchibilio-na nshioro-chiang na ewo
before Humchibilio tore in pieces-the and bamboo shoot
kamo-chiang kongken kamo-chiang topu ezoracho.
turned into-the orange-tree turned into-the all told.
Ole epue-chi-na Humchibilio-chi langta kilato lepok
Then husband-the Humchibilio-that to kill intending *dao*
thyaki vasi nhyaka vanle Humchibilio-na
sharpening keeping waiting while remaining Humchibilio
oli-lo wosi otsang-ha na yekrho-ha to
field-to having gone wood-load and wild taro-load thus
hansi oyi honkhui-na "Epu, chu-ro, oha-shi
carrying coming outside-from "Husband, out-come, load-this
a-chamchoya" to ezothechile orapvü-na chu-wo
me-lift off" thus while saying (the) husband out-going
echunga-na epanthangcho. Chi-thang Humchibilio-na
once-by killed. (At) that-time Humchibilio
"yekrho" to tyucho. Hochi-na nhungaliya yekrho
"wild taro" thus said. This-from till now wild taro
lepok-na rharoi ekhu-na enthakala to tyutala.
dao-with cutting up cook-if it hurts thus (they) say.
Chitosi ompoi vantalanchokatola
After this husband and wife would have remained
eloe-chi Humchibilio 'rru-chi-na hepi
(but) woman the Humchibilio's bones-the-with hither
hepi wo-na tsok-tsoki nti-ntila n-wocheo
hither going-if pierce-piercing any-any way not-going
pomtsangi tchhicho to tai rutala kyon-na.
swelling died thus only tell men.

Once upon a time there lived two brothers, of whom the younger was always luckier in everything than the elder. However carefully the elder cultivated his land the crops were always bad, or if he married a pretty wife she always grew ugly. One day these two went down and looked at their fields to see how they were doing, and exchanged their land, the younger giving his elder brother the fields he had prepared so well, and the elder giving his younger brother his bad fields. But the fine fields which were given to the elder brother grew poor crops, while the poor fields which the younger brother received did splendidly. Then the elder brother desired to take his younger brother's wife, who was very beautiful; so meaning

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to lay a trap for him he went with him into the jungle, taking a cock with him. As he led the way in the jungle the elder brother kept asking "Do you know this place or not," and the younger brother would answer "This is where father and I gather firewood" or "This is where I set traps for birds" or "This is where I set traps for squirrels" or "This is where I look for game" or "This is where I fish." At last they arrived at the edge of a cliff and the elder brother asked "Brother, do you know this place," and the younger brother replied "I do not know this place." Then the elder brother said "We will sleep the night here," and when they had had a meal he cut a length from the stem of a plantain tree and wrapped it in a cloth. Then putting the cock at their heads the elder brother lay down by the plantain stem and made his younger brother sleep behind him. At night when the younger brother was fast asleep the elder brother stole quietly away. But the cock called out "Cock-a-doodle-do, your brother has run away; cock-a-doodle-do, your brother has given you the slip and gone." Then the younger brother woke up and thinking the plantain tree wrapped in a cloth was his brother said "Brother, it is cockcrow. It will soon be light" and gave the plantain tree a push, so that it went rolling down the cliff. "My brother has rolled down, my brother has rolled down" he cried, and climbed down after it. Then when he saw that it was the plantain tree he hacked it into little pieces and threw them away, and called to his brother and said "A *tsangon* bird is caught in our spittle. We will share it. Wait for me," and went after his brother, but could not find him. His elder brother, when he heard his younger brother calling, scratched over his footprints and spittle with his spear butt so that his tracks would be lost, and with a shout "I am going this way. Come along" made off.

The younger brother tried in vain to catch up with his elder brother and in the evening came to a tree loaded with big red *zowoti* fruit. Up this he climbed and slept in the branches. That night the *zowoti* fruit ripened and in the morning he picked and ate some of it. Now there came to that place a tiger carrying on his back a sambhur he had killed. His carrying-band was a cobra, and he had a barking deer for a pad in the small of his back and a wild boar as a pad behind his head. In his hand was a very bright long bladed spear which he twirled and flourished, chanting "Ho, ho, ho" as he bent under his load. When he came to the *zowoti* tree he said "I smell something alive" and looked up into the branches. Then the man said "I am keeping watch over this fruit of yours, grandfather tiger, in case some stranger should come and pick it." Then he kept picking the fruit and handing it to the tiger to eat, till there was only one fruit left at the very top of the tree. Then the man said "There

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is a fruit at the very top of the tree which I cannot reach. Give me your long-bladed spear, father tiger, and I will cut it off for you. You stand down below with your legs wide apart and your mouth open and your eyes shut and I will pick the fruit and throw it right into your mouth." Then the tiger handed up his spear and stood as the man told him. And the man hurled down the spear and struck the earth at the tiger's feet without touching him. "Hullo," said the tiger, "What are you up to?" "I am only a boy, father tiger," he replied. "I could not hold your spear properly and it fell out of my hands. Hand me up your spear again and be careful to stay as you were before" Then the tiger did as he was told and the man speared him right through the mouth. Then he kept picking and throwing down leaves on the tiger to see if it was dead or not, but it was not dead, for its ears twitched when a leaf hit it. At last there was only one leaf left, and when he picked this and threw it down onto the tiger its ears did not twitch for it was dead.

Then the man came down from the tree and picked up the body of the tiger, and, chanting as the tiger had chanted, went on his way till he came to a village spring. Now there were some maidens bathing at the spring, and one of them was very beautiful, whom when he saw he greatly desired to take to wife. So he threw the long-bladed spear, and, 'tong,' it stuck in the wooden fence below the spring, but he lay hidden behind a worm-cast. But the maidens were frightened and ran up to the village and told the men what had happened. And the men came down and wondering who had done this thing tugged at the spear but could not pull it out. Then the wanderer from his hiding place laughed at them and said, "Cannot you even pull the spear out. I will pull it out 'pop' for you if you will give me the beautiful maiden who was bathing here to be my wife." Then the men of the village said, "Who was that?" and even searched among the fallen leaves looking for him, but could not find him. Now the maiden whom the wanderer desired was the chief's daughter, and her father called out "Whoever you may be if you can pull out this spear I will give you my daughter to wife. Come and pull it out." Hearing these words the wanderer came from behind the worm-cast and pulled out the spear.

Now when the wanderer was going to take his bride the maiden's father dressed up his slave girl in fine clothes and beautiful ornaments and put rags on his own daughter and threw rice husks over her. But the wanderer was too clever to be deceived in this way and took with him as his bride the real daughter.

Putting his bride into a carrying basket he set off to carry her to his village, but when he came to where the paths met below his village he found the load too heavy, and leaning the

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basket up against the bank he went up to the village to call his relations to help.

Now an ugly woman called Humchibilio on her way to the spring to fetch water saw the basket and opening it peeped inside. And finding the maiden in it she dragged her out and tore her to pieces with her hands. Then throwing the remains away below the spring she got into the basket herself and waited. When the birdegroom's relations had carried up the basket for him they opened it and looked inside and said "Is this the kind of bride you call us to carry up," and mocked him. And he, knowing that this was not the bride he had brought, was full of shame.

After a time from the pieces Humchibilio had thrown away there grew up a very beautiful bamboo shoot. When the bridegroom saw it he said "That is like my lost bride." Then he broke it off and peeled off the outer skin and brought it home and put it in the pot to boil. When he was present it only boiled "bubble, bubble, bubble," but when Humchibilio was watching it alone a voice came from the bamboo as it boiled "Humchibilio tore me in pieces. Bubble, bubble, bubble." Then Humchibilio said to her husband "Husband, listen to the noise this bamboo makes as it boils." Then he listened and heard a voice come from it as she had said, and took it off the fire and threw it out behind the house.

After a time this too grew into an orange tree with a single orange at the top. When Humchibilio went near the orange was high up at the top of the tree, but when her husband went near it bent down towards the earth. Then her husband said "That is like my lost bride" and picked it and put it in a carrying basket.

Then the orange turned into a maiden. When the husband and wife had gone to the fields she said "My beloved will be angry if I do not clean the house. He has no proper wife," and with a tinkle of ornaments she jumped out of the basket and set to work. Humchibilio's bed she defiled with filth and took up ashes and poured them on it, but her husband's bed she dusted carefully. Then she swept out the house thoroughly and prepared a meal. When the husband and wife came in they said "Who has got all this ready for us? Even if we go without food ourselves we must give him something." So they went and asked their neighbours. But their neighbours only answered "We cannot get through our own work. Who would do so much work for you?" Then one day the husband pretended to go out to work, but came back quietly and kept watch. And when the maiden jumped out of the basket, her husband exclaimed, "Eh, where have you come from?" and caught hold of her. Then the maiden told her husband the whole story of how Humchibilio had torn her in pieces and how she had become first a bamboo shoot and then an orange.

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Having heard the tale her husband sharpened his *dao* and waited for Humchibilio, intending to kill her. After a little while Humchibilio came up from the fields with a load of wood and wild taro, and called from outside to her husband within the house "Husband, come out and lift down my load for me." At these words her husband came out and killed her with one blow, and as she fell she gasped "Wild taro." That is why nowadays if you eat wild taro which has been sliced with a *dao* you get a sore throat.

After this the bride was wedded to her husband, but whenever she went out she pricked herself on Humchibilio's bones till at last she could not leave the house and her wounds swelled up and she died.

This is the end of the story.

3. THE STORY OF LANKONGRHONI.

Eran-ren-i eloe nchyua Lankongrhoni etsai
Old men-time-at woman a Lankongrhoni called
vancho. Mbo otsoi ha epue nchyua otyon elam to
was. Her child too male a very much indeed
mhona vancho. Hochi 'myang Arilao to tsacho.
handsome was. His name Arilao indeed called.
Ole oyan loroe topu-na chi tai reta lammsi
Then village girls all him only desiring wanting
tampoi-chiang n-lammcho. Chisicho oyamo topu-na mbo
others-the not-wanted. Then villagers all him
mezeni sio tyaktacho. Osi oyamo topu-na "Tyozhu-lo
to kill taking plotted. And villagers all "Fishing-to
ocho-na n-roa-na wok-tsü tsoi" to thangtacho.
who not-come-if pig-big (we) will eat" thus announced.
Chitosi nchok eni-tham-o oyamo-na tyozhu-lo wotacho. Ole
Then days two-three-in villagers fishing-to went. Then
opvü-na otsotyingo-chi "A-ngo, tyozhu-lo ti-woa" to
mother (to) son-the "My-boy, fishing-to do not-go" thus
ezoala Ariloa-na "A-pvü, nno eni wok-tsü-chi
says Arilao "My-mother, you of us two pig-big-the
n-zanchoani?" to opvü ezoa
not-care about or what?" thus (to) mother having said
tyozhu-lo wocho. Oten-na zukhu-i-na owo vekhu
fishing-to went. They river-at-to going pig trough
shaniki vasi "Ocho etamo sana yipi zeta"
making keeping "Who nice looking is lying down see"
to tyuta oyamo topu-na yipi zetasila "Nni-a
thus saying villagers all lying down seeing "You-indeed

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n-tam nni-a n-tam" to tai
not-nice looking, you-indeed not-nice looking" thus only
ezotaracho. Osi okaiti "Nhungo Arilao
kept saying. But last "Now Arilao
yipitoka" to tyuta Arilao
(we) will make to lie down" thus saying Arilao
yipitoksi "Arilao etamo, Arilao
having made to lie down "Arilao nice looking, Arilao
erhyuala, Arilao erhyuala," to tyuta
are poundlng up, Arilao are pounding up," thus saying
ono-lo Arilao-chi erhyunhyacho. Ole Arilao
fish poison-in Arilao-that pounded up. Then Arilao's
okamo-cho "Nchingo a-kamo tchhio kama" to
friend-the "To-day my-friend has died because" thus
nchama nungra tchhü-cho-wo-i-na cho-wo esütchhü
thinking sad stream-down-going-at-to down going tears
zana vancho. Ole okamo Arilao nyimtyep-chi
shedding was. Then (of) friend Arilao's nail-the
pfua choi mbo pfukacho. Chicho mbo-na
floating descending him floated against. Then he
"A-kamo-cho heto kamtakaka" to tyua okamo
"My-friend-that thus has become" thus saying friend's
nyimtyep-chi khikai tseni rikab-o
nail-the picking up wrapping up (i.e. in a leaf) belt-in
nchai hancho. Oyamo-na ongo elam to tchhi
tucking carried. Villagers fish many indeed dying
rhamtala Arilao okamo-cho ongo-tia n-rhamo nungra tai
catching Arilao's friend-the fish-any not-catching sad only
vancho. Osi oyamo-chiang yirasanati mbo silamo
remained. And villagers-the when going home he last
yicho. Ole Lankongrhoni-na otsotyungo lanyi-lo
went. Then Lankongrhoni son meet-to
rosi oyamo-chiang "Na, i-cheni,
having come (of) villagers-the "You, your-companion
i-kamo, i-ngo, i-ta-cho
your-friend, your-younger brother, your-elder brother-the
kato?" to oyamo-ching topu engaracho. Tole
where?" thus (of) villagers-the all kept asking. Then
oyamo-chiang-na topu-na "A-cheni, a-kamo,
villagers-the all "My-companion, my-friend,
a-ngo, a-ta-cho silamo loroe oten
my-younger brother, my-elder brother-the last girls they

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ematha tsaka; nhunga yika" to ezora
laughing will come; now will come" thus keeping saying

yiracho. Osi okaiti Arilao okamo-chi silamo nangra
kept going on. But at last Arilao's friend-the last sad

esütchhü zana yia vanle Lankongrhoni-na "A-ngo,
tears shedding going when was Lankongrhoni "My-boy,

na, i-kamo-cho kato?" to engale hochi-na
you, your-friend-that where?" thus when asked he

"A-pvü, nna nungra kama; i-n-zo" to
"My-mother, you sad will become; you-not-will tell" thus

ezocho. Chisicho Lankongrhoni-na, "A-ngo, a-na
said. Then Lankongrhoni "My-boy, I

n-nungrala a-zoa" to ezole hochi-na "A-pvü,
not-sorrowing me-tell" thus when said he "My-mother,

a-kamo heto kamchoche" to ezoa mbo-na okamo
my-friend thus has become" thus saying he friend's

nyimtyep rikab-o nchai hamo-chi echücho. Ole
nail belt-in tucking carried-the showed. Then

Lankongrhoni-na chi-thang-cho nungra yingtovansi
Lankongrhoni that-time-the sad remaining quiet

ochö-rachötoti "Ochö oyamo nungri topu
next day-the day after "To-morrow villagers' children all

soa ro; a-ki-[i] mungtokra a-na a-woko
bringing come; my-house-[at] making to collect I my-pig

tsopo-chi noni tsoa mungtokoka" to thanga
big-the killing eating will make to collect" thus giving notice

wocho. Tole ochöto-cho oyamo-chiang-na nungri-chiang
went. Then next day-the villagers-the children-the

topu soa wo Lankongrhoni 'ki-[i]
all taking going Lankongrhoni's house-[at]

mungtoksi oli-lo woracho. Chisilocho
having made to collect fields-to went off. Then

Lankongrhoni-na oyamo nungri-chiang mbo woko-chi noni
Lankongrhoni villagers children-the her pig-the killing

tsoa mungtokcho. Osi mbo-na nungri-chiang topu
eating made to collect. But she children-the all

takhui khalanchi vantoksi mbo honkhui chui
inside shut up having made to stay she outside coming out

"Nungriten, oki-[i] epo kolo-kolo poa?"
"Children, house-[in] holes where-where have become?"

to ezo-na nungri-chiang-na "A-tsü
thus saying-from children-the "My-grandmother

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a-tyoh chilo ha poa" na "hochi ha
my-grandmother here too have become" and "this too
poa" to ezoa oki-[i] epo-chiang ethakhana
has become" thus saying house-[in] holes-the closing
wotokcho. Okaiti mbo-na "Nungriten, nhungo epo
made to go on. At last she "Children, now holes
ba-m-ba?" to ezothechile nungri-chiang-na topu-na
are-not-are?" thus when kept saying children-the all
"A-tsü, a-tyoh, nhungo epo m-mba"
"My-grandmother, my-grandmother, now holes not-are"
to ezochokchicho. Ole mbo-na "Nungriten, toka nhungo
thus said from inside. Then she "Children, then now
mukuku-lo omi yukaka; omi a-pichokchia" to
pipe-in fire will put: fire me-give from inside" thus
ezole nungri-chiang-na omi mbo pichokchicho.
when said children-the fire her gave from inside.
Chisilocho mbo-na omi-chi-ki oki-chi rongkachi
Then she fire-the-with house-the having set alight
nungri-chiang topu rongtsangkhani sitokcho. Osi
children-the all having burnt up made to perish. But
mbo potsowoe-na oyeng sangchochicho-chi mpanga
she sky folk-the thread having let down-the climbing
potsowo-i chungi sicho.
sky-to ascending went.

Toala oyamo-chiang-na n-tsio vancho. Ole
Yet villagers-the not-knowing remained. Then
kashak-chi-na owo oli-[i] aku oyamo-chiang mhatongina
crow-the going fields-[in] all villagers-the in front of
konrossü eramsi "Arilao opvü-na oyan
little girl's skirt having put on "Arilao's mother village
nungri sha-sha" to tai khua tsokpya
children destroyed-destroyed" thus only calling out hopping
wocho. Chisicho oyamo-chiang-na "Nchingo ntoko to
went. Then villagers-the "Today what indeed
etsso kashak-na heto khua echüa to ntia
happening crow thus calling out behaves indeed something
kiya ntsso" to tyuta topu-na oyan-i
for nothing not-happens" thus saying all village-to
yitacho. Tole chiang-na ote 'tsoi
went. Then they their children
rongtsangkhamo-chiang zetasi onte
burnt up-the seeing those two

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onte-chi "I-tssoko-na,
those two-the (i.e. to each other) "Your-happening-from,
i-tssoko-na" to ezota
your-happening-from" (i.e. "it is your fault") thus saying
laplap langtatarai tchhikhancho. Osi
all having cut each other to pieces died. But
ndrindran ontyai chicho hochiang zesi
orphan brother and sister there they having seen
khyua hono-hanki-[i] tsankai mphoi vancho
fearing fowl-house-[into] getting up hiding remained.
Chitosicho oyamo-chiang laplap tchhikhansi ochiang ote
Afterwards villagers-the all being dead they them
n-vanta kama
not-to marry because (i.e. since there was no one for them to marry)
ontyai vantasi poni tssoa yicho.
brother and sister marrying mating becoming went.
Chisicho oni-na otsoi cho-yingdro
Afterwards they two-from children leg-fingers (i.e. toes)
khe-yingdro i-na mpato poki limha-lo kyon hetata
hand-fingers-in-from also being born world-in men so many
kama to mpato kyon-na rutala.
becoming thus also men say.

In the days of our ancestors there lived a woman called Lankongrhoni. She had a son who was very handsome. His name was Arilao. All the girls admired only him and wished to marry him. They cared nothing for the other men. So all the men of the village planned to kill him treacherously. They agreed that on any day when they should all go down to the river to poison fish whoever failed to come was to be fined a big pig. Two or three days later they went down. Then Arilao's mother said to him, "Son, do not go." But he said, "Do you want us to lose our big pig, mother?" and went. And the men felled a tree on the river bank and hewed a trough out of it and said, "Let every man lie in the trough in turn and see if he looks a fine man. So they each lay down in turn, but as each man lay in the trough the others kept repeating, "You don't look nice, you don't look nice." At last they said, "Let Arilao lie down," and made him get into the trough, and calling out, "Arilao looks nice; we are pounding up Arilao, we are pounding up Arilao," they pounded him up with the fish poison.[1] Now Arilao had a

[1] The ordinary Naga method of fishing is by poisoning the water with certain berries or creepers pounded up.

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friend, and he was very sad because Arilao had been killed that day, and waited weeping further down stream. Soon the finger-nail of his friend Arilao came floating down and lodged against him. Then he said, "Is this all there is left of my friend?" and with these words lifted the nail off the water, and wrapping it in a leaf slipped it into his belt. The villagers made a fine haul of fish, but Arilao's friend was so sad that he did not trouble to catch a single one. When the villagers trooped off up towards the village he hung back to the last.

Now Lankongrhoni came to meet her son on the way and asked each of her fellow-villagers, "Where is your companion?" or "Where is your friend?" or "Where is your younger brother?" or "Where is your elder brother?" And each man replied, "He is coming behind, laughing and talking with the girls. He is just coming." At last came Arilao's friend, weeping and very sad. When Lankongrhoni asked him where his friend was he said, "The news would make you sad, mother. I will not tell you." But she replied, "I shall not give way to grief, my son. Tell me." Then he said, "Mother, this is all that is left of my friend," and gave her his friend's nail which he had carried up in his belt. Then Lankongrhoni was very sad, but she hid her grief, and a few days later gave notice to the village saying, "To-morrow bring all the children to my house. I am going to kill my big pig and give them a feast there." So the next day the villagers brought all their children to Lankongrhoni's house and left them there and went down to their fields. Then Lankongrhoni killed her big pig and feasted the village children on it. Afterwards she made the children remain shut up in her house while she went outside and said, "Children, tell me where there are holes in my house," and they replied, "There is a hole here, granny," or "There is a hole there, granny," and she stopped up the holes as the children told her of them. At last she called from outside and said, "Are there any more holes, children?" And they replied, "There are no more holes, granny." Then she said, "I want to light my pipe now Give me a brand." So they gave her a brand and she set fire to the house and burnt all the children to ashes. But she herself climbed away up a thread thrown down from the sky and disappeared.[1]

Now the villagers knew nothing of what had happened. But a crow went from field to field and hopped about in front of the workers dressed in a skirt like a little girl, and said, "Arilao's mother has utterly destroyed the children of the village." Then the villagers said, "What does it mean

[1] The version of the story given here is that current among the Northern Lhotas. In the Southern Lhota account Lankongrhoni escapes into a porcupine's hole, from which she is afterwards dug out and killed.

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to-day, a crow behaving like that? Surely something has happened," and so saying they all went off home. And when they saw that all their children had been burnt up, each said to his neighbour, "This is your fault, this is your fault," and they fell upon each other and killed each other so that they all died. But two orphans, a brother and sister were frightened when they saw this and climbed up into a fowl-house and hid. Afterwards, all the villagers being dead, there were none for them to marry, so they became husband and wife and from these two, even from their fingers and toes, were born all the men there are in the world. This is one of the stories which men tell.

4. THE ORIGIN OF THE KITHANG CLAN.

Yanzo to etsai Kikung nchyua-na mbo phurro
Yanzo indeed called Kikung a his dogs

toku sosi 'so phano wocho. Ole phurro-chiang-na
nine taking game to chase went. Then dogs-the

otong ntsanga tsang-kuk mbata licho chilo tai
tree a wood-hole remaining was there only

ehapya thryuta mungcho. Chisicho
running backwards and forwards barking remained. Then

Yanzo-na "A-phurro-na thamacho heto n-thryu" to
Yanzo "My-dogs for nothing thus not-do bark" thus

tyua otong-chi tani zele ora-kyon nchyua
saying tree-the cutting when looked jungle-man a

tanchecbo; hochi mbo-na soa yi ekhamsi
cut out; him he taking going having brought up

Kithamo tsacho. Chisicho Kithamo-na otsoi nchyua
Kithamo called. After this Kithamo-from son a

vanle Mering tsacho. Hochi eloe nchyua Khamdrio
when was Mering called. (To) him girl a Khamdrio

to etsai vancho soa vantokcho. Hochi tsan-cho
indeed called was married made to be. Her hair-the

esi ntia-si raho. Osi
long outstretched arms-long one outstretched arm. But

mbo-na nchoka kurr nzhüle otsan ntsanga otchhü-i
she one day head when washing hair a water-in

elhungthecho; hochi pukiro-na nzücho. Pukiro-chi-na
fell; this (a) little fish swallowed. Little fish-the

zukhu tsunga choile Asam nchyua-na rhamacho.
stream along when went down Assamese a caught.

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Ngo-rham-chi-na pukiro-chi thanle otsan-chi hüngi
Fish-catcher-the little fish-the when split hair-the having seen

emhoktsanga khi hansi ekyung chi echücho. Chisicho
amazed taking carrying (to) king-the showed. Then

ekyung-chi-na tsan-pfui sosi yita to ezoa emenopang
king-the hair-owner bringing come thus saying councillor

etssoi nchyua na mbo woro to Mering 'yan-i
being a and his servants indeed Mering's village-to

wotokcho. Toala Mering-na zikhra-ki epi vacho
sent. But Mering stinging leaves-with fenced kept

sakama ekyung woro-chiang-na hochi yaki n-wochecho.
because (the) king's servants-the this piercing not-went.

Tole emenopang etssoi-chi-na ekyung woro-chiang
Then councillor being-the king's (to) servants-the

"Wo-a teni hanta oyi ekyung echüka" to
"Leaf-one picking carrying coming (to the) king will show" thus

ezoa chiang teni hantoksi oyi ekyung-chi
saying them picking making to carry coming (to) king-the

"Heto-na pikhu epi lia kama kotoli yaka
"Thus-with fortification fenced is because in any way piercing

n-wo" to ezocho. Ole ekyung-chi ssü-küpi-na
(we) not-went" thus said. Then king's-the clothes-inside-on

mma-no taki zetokle noa kama
stomach-on stinging when caused to see pain because of

ekyung-chi-na emenopang etssoi-chi "Mering-cho
king-the (to) councillor being-the "Mering-that

nto-nto-na khyua sana enga" to ezoa engatokcho.
what-what-by frightened is ask" thus saying made to ask.

Ole Mering-na "Limha-lo-cho ntia a-n-khyu;
Then Mering "World-in-the anything me-not-frightens;

osi sotsü toku manku-i khongkho kokai sosi
but (of) elephants nine back-on cotton piling up bringing

chong-ro-na chicho a-khyu" to ezolancho. Chisicho
up-come-if that me-frightens" thus replied. Then

ekyung-chi-na sotsü toku-chi zikhra epi epfu
king-the elephants nine-the stinging leaves fence lines

toku-chi ro-lo chong-rotokcho. Chisicho Mering-na otso
nine-the come-to up-made to come. Then Mering spear

rinyu-na vansi sotsü-chiang-na chong-ro
heating red hot-by being elephants-the up-coming

zikhra epi-chi chanale chencho. Tole
stinging leaves fence-the when reached threw his spear. Then

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khongkho-chi rongi sotsü-chi rong chanale
cotton-the catching alight elephant-the fire when reached
chi-na thampo-chiang 'yoi tsana thrile
it others-the among running away when going in
chiang ha pongkarai rong na sotsü-chiang-na
they too one after the other caught alight and elephants-the
tsana-thang kyon ha elam to samtsangkhancho.
(at) running away-time men too many indeed trampled to death.
Chisicho ekyung-chi-na "N-khontala, shishotaka" to
Then king-the "Not-quarrel, trade" thus
ezoa" to tyua Asam nchyua "Senthan
say" thus saying (to) Assamese a "(Of) cornelian beads
mori ntsanga hansi chongoke, osi shio to tyua lia
pot a taking go up, but buying indeed saying is
ti-shitok-na yenpya wosi zikhra 'yoi
do not-allow to buy-from hawking going stinging leaves among
nrokthechi sisi choike" to ezoa chongo
scattering having thrown come down" thus saying going up
chito liutokcho. Tole Mering-na mbo zikhra
thus made him do. Then Mering his stinging leaves
pikhu-chi laplap tsoni sia senthan-
fence-the all cutting down throwing away cornelian beads
chiang yantokcho. Chisicho ekyung-chi-na
the allowed (men) to seek. Then king-the
mbo kyon-ki phurro sonhyasi Mering phano chong-
his men-with dogs having taken Mering to chase up-
rotokcho. Ole Mering-na Yanzo 'yan-i tsana oyi
made to go. Then Mering Yanzo's village-to fleeing going
Yanzo tsankacho. Tole Yanzo-na mbo 'ki
(with) Yanzo took refuge. At that time Yanzo his house
etsso lishu kholok tssoi vao-chi küpi
building thatching grass heap being kept-the underneath
mphotokcho; osi chi 'poni tyokaivacho. Chisicho
made to hide; but it on the top of eased himself. Later
Asam-chiang-na phurro sosi lishu kholok
Assamese-the dogs having brought thatching grass heap
tssoi vao-chi shyupya yanle chi-thang
being kept-the scratching aside when searching (at) that-time
"Nte Asam phurro-cho ntsaila to-na a-na
"Your Assamese dogs-those are knowing thus-from I
tyoivale chi yantalakato?" to ezocho. Chisicho
defaecating that are they looking for?" thus said. Then

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Asam-chiang-na yikrara phurro-chiang esükha sosi
Assamese-the in shame dogs-the whipping off taking
yiracho. Chitosi Mering to na Yanzo to
went-away. After this Mering indeed and Yanzo indeed
oni chibu-a khamo kothanga eloe n-soa vantao
they two clan-one becoming ever wife not-taking would be
echhama yonchak etsi erhansotacho. Chisi Mering-na
swearing iron staff broke. Later Mering-from
otsoi nchyua vancho, chi 'myang Rapvu tsacho; hochi-na
son a was, his name Rapvu called; he
Nungkamchung-o vancho. Ole mbo-na Kikung nchyua
Nungkamchung-at lived. Then he Kikung a
eng-thangi oshom tssole chi-na otsoi epue
woman-with committing adultery being her-from child male
nchyua poki hochi 'myang Lobemo tsacho. Lobemo
a begetting his name Lobemo called. Lobemo's
rui nhungacha Tsingaki-lo vana, osi Rapvu eng
descendants still Tsingaki-at live, but Rapvu's wife's
nthang-chi 'tsoi-chiango Kithang chibu echancho.
real-the children-the Kithang clan formed.

One day a man of the Kikung clan named Yanzo took his nine dogs with him and went to hunt deer. But they would do nothing but jump and give tongue round a tree with a hole in it. Then Yanzo, knowing that his dogs would not give tongue for nothing, cut down the tree to see what was inside it, and found in it a jungle man.[1] This man he took home and brought up and called Kithamo. Kithamo had a son called Mering, for whom Yanzo arranged a wife called Khamdrio. Now Khamdrio had wonderful long hair—once and a half as long as a man could span with outstretched arms. One day when she was washing her head at the river one of her hairs fell in and was swallowed by a little fish, which went down the stream and was caught by an Assamese. The fisherman was amazed when he split open the fish and saw the hair, and took and showed it to the king. Then the king gave orders that the woman to whom the hair belonged was to be brought to him, and sent one of his councillors with his soldiers to Mering's village. But Mering had fenced his village with a hedge of stinging leaves, which the king's soldiers could not penetrate. Then the councillor ordered his soldiers to pick one of the leaves and take it back with them. And he came to the king and said,

[1] Most Naga tribes have stories of the adoption of jungle men. They are probably based on the absorption of Negrito aborigines.

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"The village is fenced with a hedge of this, so that we could by no means force it." And the king took and put the leaf on his stomach under his clothes to see how it would sting, and he understood how terrible the pain was. Then he sent the councillor to inquire of Mering whether there was anything of which he was afraid. And Mering made answer, "There is nothing in the whole world of which I am afraid. You can only make me afraid by sending up to my village nine elephants with cotton piled on their backs. That will make me afraid." So the king sent up nine elephants to break down the nine hedges of stinging leaves. Then Mering heated his spear red hot, and waiting till the elephants had reached the fence, threw it at the first one. The cotton on its back caught alight, and when the flames reached its body it ran in among the other elephants and set them alight one after the other. Then the elephants fled and trampled many of the men to death. Then the king announced that he would cease to fight with Mering and would trade with him instead. And he called an Assamese and said to him, "Take a pot of cornelian beads with you and go up to Mering's village. If anyone wishes to buy from you, do not sell, but go on hawking your wares right through the village, and as you go scatter beads in the hedge of stinging leaves. Having done this come down to me again." And he went and did as he was bade, and the men of Mering's village cut down and destroyed all their hedge in their search for the beads which had been scattered there. Then the king sent men into the hills with dogs to hunt down Mering, and Mering fled to Yanzo's village to take refuge with him. It so happened that Yanzo was building his house. He therefore made Mering hide under a heap of thatching grass which was lying ready to hand, and then went and eased himself on the top of the pile. When the Assamese came up with their dogs they began to toss the thatching grass to this side and that in their search for Mering. Then Yanzo said to them, "Your dogs are very clever. Perhaps they are looking for this filth here." At these words all the Assamese were filled with shame and whipped off their dogs and departed. Because of this Mering and Yanzo broke an iron staff and swore on it that they would become one clan and would never intermarry. Afterwards a son was born to Mering whose name was Rapvu. He lived at Nungkamchung, where a bastard son was born to him of a woman of the Kikung clan. This son's name was Lobemo and his descendents still live at Tsingkaki. But the legitimate children of Rapvu are the ancestors of the Kithang clan.

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5. THE STORY OF LICHAO'S DAUGHTER.

Echunga kyon nchyua-na nipong-na mbo 'li elam
Once upon a time man a wild pig his fields much
to tsoicho-na mbo-na sotyemo wocho. Tole mbo-na
indeed ate-because he to hunt went. Then he
nipong ntsanga chenchi rua rua wole
wild pig a having speared following following when went
Lichao 'ki ruchokchicho; hochi nipong tyemstü
Lichao's house followed up to; he (of) wild pig (was) guardian
'motzü. Osi loroe nchyu' eni-na mbo-na chenchi-ochi
grand father. But girls one two he speared-the
ochak pia vancho. Hochiang-na "Ntolo rochola?" to
food gave remained. They "Why have (you) come?" thus
mbo engacho. Ole mbo-na nipong chenchi langta
him asked. Then he wild pig having speared to kill
kilato osü rua wochi tyuo khyua n-zocho;
intending track following came to say fearing did not-say;
hochi-tssoko-na mbo-na "Nte-ki-[i] loroe mhon nchyu' eni
this-being-from he "Your-house-[at] girls fine one two
vana to tyuta 'zocho-na nchyua a-na soa
are thus speaking (men) said-because one I marrying
vanka to ze-lo rocho" to ezocho. Tole oten-na
will remain indeed see-to came." thus said. Then they
"Tsangon-poeti ro" to ezole mbo-na yicho. Chitosi
"Day-another come" thus when said he went Afterwards
mbo-na wolanle Lichao-na mbo ndri loroe-chi olantaro
he when went again Lichao his slave girl-the something
mhon mhon pipotok na ossü
fine fine having made her put on ornaments and clothes
mhon mhon mpenssütoksi vantok na
fine fine having made to put on caused to remain and
mbo otsolo-chi shilap shilap mmena mmena lui
his daughter-the untidy untidy dirty dirty making
mpongki-[i] vantokcho. Toala
outer room of the house-[in] caused to remain. Nevertheless
epue-chi n-tchüthechicheo tssocho. Mbo-na Lichao
man-the not-to be deceived was. He Lichao's
'tsoi nthong-chi lamm-i-ki hochi soa
daughter real-the preference-with-by that one marrying
vam kilato tssocho. Osi Lichao-cho mharrekam
would be intending was. But Lichao-that were-tiger

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kyon 'so etsoi sakama mbo chenchisi
men's flesh eater being him having made to work

hochi n-ngaiche-na rham kilato nchama
him not-fulfilling-if would seize intending thinking

chenchicho. Osi loroe-chi-na mbo soa vam
made to work. But girl-the her marry would remain

etsso epue-chi "A-po-na i-chenchi-na a-zoke a-na
(to) man male-the "My father you-sets tasks-if me-tell I

i-zoka" to ovung-na ezoi vacho. Ole
you-will inform" thus first-from having said kept. Then

nchokacho Lichao-na otsolo soa vam tsso-ochi
one day Lichao daughter marry would be man-the

"Owo kotyoh koremyoi oyo epo ·ti-mbatok-na
"Going thorns brambles leaves torn not-allow to be-if

chok na i-tsak-ko ha tara-tia
picking and your-body-on too a little-only

ti-rhashak-to-na choki hana yia
prevent-scratch-even-if having picked bringing come

to-na a-tsolo i-soa
thus-by (i.e. then) my-daughter you-marrying

vantokoka" to ezocho. Tole loroe-chi-na
will allow to remain" thus said. Then girl-the

orapvü-chi "I-tsak-ko okhu mba na
(to) husband-the "Your-body-on scratch is and

oyo-chiang epo mbo to tssoa yichocho a-po-na
leaves-the torn are thus being coming my-father

i-rhamka" to ezole orapvü-chi-na owo mbo
you-will seize" thus when said husband-the going his

tsak-o ha okhu okhu m-mba na oyo-chiang
body-on too scratch scratch not-is and leaves-the

ha epo m-mba to-na teria shichei hanai
too torn not-are thus-from small having rolled up having brought

Lichao picho. Osi Lichao-na "Oyo shi-tai-
(to) Lichao gave. But Lichao "Leaves these-only-

na-cho e-n-tsochuola to ezoa lamphei
from-the we-not-eat enough" thus saying having opened

zele mbo honkhu-chi sazhucho.
when saw his outside of house-the was covered.

Chitosi ha Lichao-na "Nhungo woke i-poti-na
Afterwards too Lichao "Now (a) pig you-alone

rhamai changa to-na a-tsolo i-soa
having caught tie up thus-from my-daughter you-marrying

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vantokoka" to ezoa orr m-pom pile
will allow to remain" thus saying cane un-split when gave

woko-chi nipong sakama kotolui rhamao
pig-the wild pig because was how possibly would catch

to nchama vanle eng-na "N-na woko-chi
indeed thinking while remaining (his) wife "You pig-the

rham-shukchocho a-po i-rhamka; mhona lui
(if) catch fail my-father you-will seize; good having made

rhamake" to ezoa mhona rhamatoksi
catch" thus saying well having made to catch

eng-na orr m-pom-chi echekrhui
(his) wife cane un-split-the having hit on the ground

pile orapvü-na kheta-na woko-chi
when gave (the) husband (one) hand-with pig-the

rhamai nanyasi khet-na
having seized having held against himself (the other) hand-with

orr-chi ntyiorhui changcho. Tole Lichao-na
cane-the having split pieces off tied up. Then Lichao

otsolo-chi soa vantokcho.
daughter-the marrying (him) allowed to remain.

Chitosi eloe-chi-na orapvü 'ki yisi
After this girl-the (her) husband's house (to) having gone

nsangkangu kyon 'so-chi n-tsotyatale elam to
a little later men's flesh-the not-getting to eat very indeed

kurria ethu n-chhüo olampemo yicho.
becoming weak strength not-having idle became.

Ole orapvü-na "Nno nto-tsso-na heto
Then (her) husband "You what-being-because of thus

i-kurria ethu n-chhüa to?" to
you-becoming weak strength not-have thus?" thus

ezole eng-chi-na "Nkolo a-po ete-tso-
when said wife-the "Formerly my-father our-food-

pen-yu-pen n-tsoyao chi-na a-kurria
gave-drink-gave not getting to eat this-from I-becoming weak

ethu n-chhüala" to orapvü ezocho.
strength not-do have" thus (to her) husband said.

Chisicho orapvü-na "I-po nteno nkoto
Then (her) husband "Your-father you what kind of

tsotala?" to ezolo eng-na "A-poang 'ki woa
do eat?" thus when said (his) wife "My-parents' house going

to-na oso nkapi i-hantokoka
thus-from meat having wrapped up (they) you-will cause to carry;

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lamphei ti-ze-na hana-ya" to ezoa
having opened do not-look-by bring-come" thus saying

wotokle eng-chi opoang-na kyon 'so
when made to go wife's-the parents men's flesh

nkapi pio-chi lamphei n-ze-na
having wrapped up gave-the having opened not-seeing-by

hanai pia tsotokle chi-topo eloe-chi
bringing giving when made to eat this-through girl-the

peleta nchürang essa ethu chhüa yicho. Chitosi
strong before like strength having became. After this

nchokania tai tssoa nhunga eloe-chi-na kyon
a few days later only. being again girl-the men's

'so n-tsotyatale nhunga elam to kurria
flesh not getting to eat again very indeed becoming weak

ethu n-chhüo olampem kamcho. Osi
strength not-having idle became. But

orapvü-chi ezolancho "Opoang
(to her) husband-the (she) said again "(To) parents'

ki owo oso khi hanai pi" to
house going meat fetching bringing give" thus

ezocho. Olo orapvü-na eng-chi opoang ki owo
said. Then (the) husband wife's-the parents house going

oso khilani hanai ntokoto 'so
meat fetching again bringing what kind of meat

tso-na eng kurria ethu n-chhüo
eating-from (his) wife becoming weak strength not-having

olampem kam-ochi mhona sana to 'so-nkap-chi
idle became-the well is indeed meat-parcel-the

lamphei zeo kilato nchamcho. Toala
having opened to see intending thought. But

Lichao-na kyon-'so-nkap-chi olan-i
Lichao men's-flesh-parcel-the road-on

n-lamphetoko kilato woro-ro pana
not-would allow to open intending (a) bird-little with (him)

wotokcho. Ole kyon-chi-na Lichao-na otsolo
made to go. Then man-the Lichao daughter's

echi 'so-nkap hantoko-chi olan-i-na
share meat-bundle made to carry-the path-on-from

lamphei zeo kilato tsampi-na woro-ro-chi-na
having opened to see intending touched-if bird-little-the

"N-na hochi lamphechocho a-na a-motzü ezo,
"You that if open I my-grandfather will tell,

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n-na hochi lamphechocho a-na a-motzü ezo"
you that if open I my-grandfather will tell"

to tai ezosi mbo-na 'so-nkap-chi lamphei
thus only having said he meat-parcel-the having opened

n-zechecho. Tokatola mbo-na 'so-nkap-chi
not-did-look. Then he meat-parcel-the

hanai eng pisi oki-na opo-na
bringing (to his) wife having given home-from (her) father

ntokoto 'so hantokcho sana to mphoa
what sort of meat made him bring is indeed hiding

yingto cheta vancho. Ole opo-na kyon
quietly watching remained. Then (her) father men's

yingdro tai nkaprhui hantok-ochi
fingers only having wrapped up made to carry-the

otsolo-na lamphei omi-na pham-phami
(his) daughter having undone fire-with roast-roasting

tsoa vancho, orapvü-na hochi hüng-ki lamm
eating remained, (her) husband this seeing-by liking

n-tsso eng-chi ezocho, "I-poango nto
not-being (to) wife-the said, "Your parents what

'so i-hantokchola, na nto 'so tai
meat for you-cause to be brought, and what meat only

tsotatoala to ezole eng-na "Mo, i-n-zo:
do you eat?" thus when said (his) wife "No, you-not-I tell;

n-na lamm tsso ma-kama na i-khyu
you liking being not being-because and you-fearing

tsso-kama" to ezole orapvü-na
being-because" thus when said (her) husband

"A-n-khyula; a-zoa" to ezocho. Tole eng-na "Toka
"I-not-am afraid; me-tell" thus said. Then (his) wife "Then

a-na mharr kama a-na opang khusi
I tiger shall turn into I mouth having opened wide

erhua pongpi-na n-na okhyu-ki a-venyake, osi
roaring wander-if you basket-with me-cover up, but

chi-thang a-n-venya-na i-lia i-rhamka" to
that-time me-not-cover up-if you-even I-shall seize" thus

ezosi mharr kama opang khusi
having said tiger turning into mouth having opened wide

erhua pongpile orapvü-na okhyu-chi-na
roaring when wandered (her) husband basket-the-with

venle venshuki-ki eng-chi-na
when covering failing to cover-through (his) wife-the

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rhami	mbo	tsocho.	Shi	motsü-shi	tai.
having seized	him	ate.	This	story-the	only.

Once upon a time wild pigs damaged a man's crops very badly, so he went down to hunt them, and wounded one with his spear. This he tracked and tracked till he came to the house of Lichao, the old man guardian of wild pigs. There he found two maidens feeding the pig he had wounded. They asked him what he had come for, but he was afraid to tell the truth and say that he was tracking a wild pig that he had wounded, so he replied, "Hearing that there were two beautiful maidens at your house I came to see, hoping that I might take one as my wife." Then they told him to come another day, so he departed.

When the man came a little later Lichao made his slave-girl put on beautiful ornaments and fine clothes, but his real daughter he made to sit all in rags and dirty in the outside room. But the man was not to be deceived He loved Lichao's daughter and would only take her. Now Lichao used to turn into a tiger and eat human flesh. Therefore he set his son-in-law hard tasks, meaning to devour him if he did not fulfil them. But when she knew this the maiden said to him, "Whatever task my father gives you to perform, tell me and I will reveal to you his purpose." So one day Lichao said to the man, "Go and pick the leaves of *kotyoh* thorns and *koremyoi* thorns, and bring them without a single leaf being torn and without a single scratch on your body. If you do this I will let you depart with my daughter." Then the girl said to her husband, "If you come home with the slightest scratch on your body, or with a single leaf torn, my father will devour you." So her husband went and picked the leaves without a single one being torn and without scratching his body in the least, and rolled them into a very tight bundle and brought and gave them to Lichao. Then Lichao said, "Only that amount will not be enough for us," but when he opened the bundle to look, the leaves covered all the ground in front of his house.

A few days later Lichao said, "If you can catch and tie up one of my pigs alone I will let you take my daughter and go," and with these words gave him a length of unsplit cane. Then the man fell to thinking how he could catch one of the pigs, for they were wild pigs; and his wife said to him, "If you cannot catch a pig my father will devour you." At last he caught a pig, and his wife beat the cane on the ground to fray it and gave it to him. Thus holding the pig with one hand he pulled off strips of cane with the other and bound the pig fast. Then Lichao let him take his daughter and go.

So the girl came to her husband's house. But there she could get no human flesh to eat, and soon became so weak

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and thin that she could not work. One day her husband said to her, "Why are you so weak and thin?" To which his wife replied, "I am thin and weak because I cannot get the food which my parents used to give me." Then when her husband asked what her parents used to give her to eat she replied, "I will send you to fetch a parcel of meat wrapped in leaves from my parents' house. But bring it straight here. Do not open it and look to see what is inside." So he went, and his wife's parents gave him some pieces of human flesh wrapped up in leaves. This he brought straight home to his wife without opening the leaves to look to see what was inside, and when she ate it it made her as plump and strong as ever. But in a day or two, because she could get no more human flesh to eat, she again became so thin and weak that she could not work. Then she spoke to her husband again and told him to go and fetch some more meat from her parents'-house. Now her husband was determined to open the bundle and see what kind of meat it was that made his wife get well again when she was so thin and weak that she could not work. But Lichao sent a little bird to go back with him so that he should not open the parcel of human flesh on the way. When the man fingered the parcel which Lichao had given him, having it in his heart to open it, the little bird said to him, "If you open it I shall tell my grandfather; if you open it I shall tell my grandfather." So he did not open it to look inside. But when he had given the parcel of meat to his wife he went and hid and watched quietly to see what kind of meat her father had given him to bring. Now it was nothing but human fingers tied up in leaves that her father had given him to bring. And his wife undid the leaves and roasted the fingers lightly in the fire and ate them one after another. Now when he saw this her husband was much troubled and said, "What meat have your parents sent you? What meat is that you are eating?" But she said, "Nay, I will not tell you. You will only be troubled at heart and filled with fear." But he said, "I shall not be afraid. Tell me." Then his wife said, "I shall turn into a tiger. When I go about the house showing my fangs and roaring you must slip a basket over me. If you cannot slip a basket over me I shall devour even you." With these words she turned into a tiger, and her husband tried to cover her with a basket but could not, so she caught and ate him. That is the end of the story.

6. THE STORY OF RAMPHAN.

Longcham-o	vana-thang	mharr	elam	to	
Longcham-at	staying-time	(a) tiger	much	indeed	
ntacho.	Engana	eloe	yinga	otsak	toku rhamkhancho.
attacked.	One day	women	party	all	nine seized.

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Ngarohang nchyua rhamnhyacho. Hochi Ramphan eng.
Pregnant one seized. This Ramphan's wife.

Tole oyamo kyon topu-na "Oyan-shi-lo n-van"
Then villagers men all "Village-this-in not-stay"

to tai tyutacho. Ramphan-na "Oyam-oten, a-na
thus only said. Ramphan "Villagers-all, I

owo zeka" to tyua yantheng hansi owo
going will see" thus saying long *dao* carrying going

yingdro aku-lo ticha zenthei omang toku-chi-
finger each-on thin bamboo fixing corpses nine-the-

lung-i-na mharr-chi yipa nhyakcho. Chisilocho
among-in-at tiger-the. lying down awaited. Later

mharr-chi-na oyi omang toku-chi "Shicho 'li-lo
tiger-the coming corpse nine-the "This one field-to

woi rhamcho, shicho 'tsang-o woi rhamcho,
going (I) seized, this one wood-for going (I) seized,

shicho tchhü-lo woi rhamcho, shicho 'yo chong
this one water-to going (I) seized, this one leaves plucking

rhamcho, shicho 'hanteng rhamcho, na
(I) seized, this one relish (while fetching) (I) seized, and

shicho 'tyokha-i rhamcho" to tyua 'so-khyu
this one fishing-at seized" thus saying meat-piece

'so-khyu-na nkakchosila va-va to tssoa
meat-piece-from taking a bite leaving-leaving thus being

oyi Ramphan chanale "Shicho 'so-tacho"
coming Ramphan when reached "This one meat-extra"

to tyua echami thampoi vasi mharr-chi
thus saying seizing laying aside having left tiger-the

yipcho. Tole Ramphan-na yingdro aku-lo ticha
lay down. Then Ramphan finger each-on thin bamboo

zenthe-ochi mharr-chi yip-yipa-na to ticha-chiang
fixed-the tiger-the asleep-asleep-if indeed thin bamboos-the

emerap-na mharr-chi-na n-yipo enno-chi elhampya
snapping-if tiger-the not-asleep ears-the twitching

van van to tssocho. Okaiti Ramphan-na
remaining remaining indeed was. At last Ramphan

ticha toku emerapsi ntsanga tai tssoale
thin bamboos nine having snapped one only when was

"A-na shi emerapsi mharr-chi n-yip-na tai
"I this having snapped tiger-the not-asleep-if only

ka" to tyua ticha ntsang-chi emeraple
is" thus saying thin bamboo one-the when snapped

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mharr-chi enno n-lhampyo yipisicho. Tole Ramphan-na
tiger-the ears not-twitching was asleep. Then Ramphan

mbo yantheng-chi-ki hana 'wo mharr-chi
his long *dao*-the-with taking going tiger-the

woni hansi tungti-lo-cho hoki
having beheaded carrying (the head) peak-on-the war cry

ten. Ekok-i-cho eng rham-ochi nchamchei nungra
shouted. Valley-in-the wife seized-the remembering sad

to tssoa "A-na yanri tyoa
indeed becoming "I village-enemy having defeated

tsaka, oyam-oten oyan ti-tyontana a-nhyakle"
am coming, villagers-all village not-deserting me-wait for"

to thanga yile mbo-na oyan chanacho
thus shouting when coming he village (when) reached

oyan-chi tyona yitakcho. Oyamo-chiang-na
village-the (they) deserting had gone. Villagers-the

ekoni-na mbo thangchicho "O en-a wokopu manku-i
afar-from (to) him shouted "O we sow's back-on

tsokzhu ntyakai sua yika; chi rrüa yike"
husks sprinkling taking will go; that tracking come"

to ezochia yiracho. Tole Ramphan-na hochi rrüa
thus saying went on. Then Ramphan that tracking

yile olan-i eloe ranoi nchyua phayacho.
when going path-on woman leprous a caught up.

Hochi 'myang Mangtsilo to tsacho. Mbo-na
Her name Mangtsilo thus was called. She

Ramphan-chi "A-motzü, ntoku to etssosa-na
(to) Ramphan-that "My-grandfather, what indeed being-from

ndrrütsu-shi-na "Ndrrü hau ndrrü hau hau,
snake-this "Snake plant ho snake plant ho ho,

Mangtsilo" to khua oyi a-cho-lo apyukaicho?
Mangtsilo" thus calling coming my-leg-on crawled?

Hochi ntoko to etssoa to, a-motzü?"
This what indeed happened indeed, my-grandfather?"

to mbo engacho. Tole Ramphan-na "Toka hochi
thus him asked. Then Ramphan "Then this

nnoki thei zeta" to ezoa hochi nnoki
crushing putting see" thus having said that crushing

thei zetokle eloe orano-chi pocho.
putting when made to see woman leprous-the was cured.

Chisicho eloe-chi Ramphan-na soa vancho.
After that woman-the Ramphan marrying remained.

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Enga mbo-na eng-chi mbo honkhui ossü
One day he wife-the his (house) outside cloth

taka vantoksi mbo ndri-chiang phiro
weaving having caused to remain his slaves-the tops

emunga emunga owo Mangtsilo 'tyai-chiang noa
spinning spinning going Mangtsilo's brothers-the enticing

noa oyi mbo honkhui-na phiro-chi eng
enticing coming his (house) outside-from tops-the wife

nthangi tai emungchitokcho. Ole ote nchyua-na
near only made to spin. Then (of) them one

Mangtsilo-chi mhona chetheiki oyi opo ha
Mangtsilo-that well recognising going (to) father and

oyo oni "Ochicho a-ta-na atato vana"
mother both "That (woman) our-sister-to like is"

to ezocho. Tole opo ha oyo oni-na-chi
thus said. Then father and mother both-( )-those

n-nungtso "I-ta-cho nkolo-na orru-long
not-believing "Your-elder sister-the before-from bones-and all

mpato nrhonroi sitakna kolo i-ta
too rotting having been lost where your-elder sister

vana to?" to tai ezona mbo-na "A-ta-na
is indeed?" thus only saying he "Our-elder sister-to

atato ochi vana" to tai ezomungcho. Chisicho
like that is" thus only kept saying. Then

opo ha oyo oni-na owo zele otsotso
father and mother both going when saw truly

Mangtsilo sakama Ramphan-thangi oman
Mangtsilo since was Ramphan-from marriage price

choncho. Osi Ramphan-na "A-mo
demanded. But Ramphan "My-father in law

khulichotan a-pia; to-na oman nte-
marriage meat me-give; thus-from marriage price (to) you-

pika" to omo ezocho. Chisicho
will give" thus (to his) father in law said. Then

omo-na. "A-rro, toka nto lua
(the) father in law. "My-son in law, then what (shall I) do

to; yengkok ntsanga na otsap ntsanga to
indeed; spoon a and bamboo spoon a thus

tai lui a-pia" to ezole mbo-na
only making me-give" thus when said he (i.e. Ramphan)

yengkok ntsanga na otsap ntsanga to tai lui
spoon a and bamboo spoon a thus only making

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omo picho. Hochi-tssoko na Ramphan
(to his) father in law gave. This-being-from Ramphan

onpoi-na otsoi epue nchyua eloe nchyua to
couple children boy one girl one thus

tai pokcho.
only got.

Ramphan-na mharr womo yantheng-chi nhungacha
Ramphan tiger beheaded long *dao*-the to this day

Akuk-i lia.
Akuk-at is.

When the Lhotas were living at Longcham[1] a tiger caused them grievous loss. One day it killed all of a party of nine women. Among them was Ramphan's wife, who was about to become a mother At this disaster all clamoured to abandon the village, but Ramphan said he would go and face the tiger. First he put on each of his fingers a section of thin bamboo. Then he took his long *dao*[2] and lay down among the corpses of the nine women and waited for the tiger. Soon the tiger came and went to each corpse and ate a little of the flesh and laid it on one side, saying as he did so, "This one I killed on her way to the fields," or "This one I killed when she went to cut wood," or "This one I killed on her way to fetch water," or "This one I killed when she went to pick jungle leaves," or "This one I killed when she went to get vegetables," or "This one I killed when she was going down to fish." At last he came to Ramphan and said, "This one I do not remember," and picked him up and laid him aside, and then settled himself down to sleep. Then one by one Ramphan began to snap the pieces of bamboo on his fingers to see if the tiger was asleep or not. But at each snap the tiger pricked up his ears. At last when he had snapped nine of the pieces of bamboo and there was only one left, Ramphan thought to himself, "If the tiger is not asleep when I snap this I am done for." But when he snapped the last remaining piece of bamboo the tiger did not prick up its ears, for it was fast asleep. Then Ramphan rose up and cut off the tiger's head with his long *dao*, and climbed with it up to the top of a high spur and shouted the shout of a warrior who has taken a head. But he was sad when he thought of his wife lying dead in the valley below. And he called to his village men and said, "I have slain our enemy.

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[1] A long abandoned site on Wokha Hill, the first settlement of the Lhotas after they split off from the Rengmas.

[2] A long *dao* of obsolete pattern of which a few are still preserved at heirlooms. One which is owned by the leading family of Akuk village is reputed to be the actual one mentioned in this story. It is rarely shown to strangers.

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Do not desert your village. Wait for me." But when he reached home he found that the villagers had already abandoned the place. From far away they shouted back to him, "We have sprinkled the back of one of our sows with rice husks, which fall as she walks. Follow the track of that and come." Now as Ramphan followed the trail of rice husks he caught up on the path a woman who was a leper. And the woman, whose name was Mangtsilo, said to Ramphan, "What does this mean, father? A poisonous snake here said, 'Snake-plant, snake-plant, Mangtsilo,' and glided over my leg. What does it mean?" Then Ramphan told her to crush up some leaves of the snake-plant and lay them on her leg. And she did as he told her and her leprosy was cured. Then Ramphan took her as his wife .

One day when Mangtsilo was weaving outside her house, Ramphan's slaves began to spin their tops near by. They made Mangtsilo's brothers join in, and drew them on and on till they came close to her house. Then one of the brothers recognized his sister Mangtsilo, and went and told his parents that he had seen a woman exactly like his sister. But his parents said, "Your sister was lost long ago. Her very bones have rotted away by now How could you have seen her?" But he said again and again that he had seen a woman exactly like his sister, so that at last his parents went to see and found that it was indeed Mangtsilo. Then they demanded her marriage price from Ramphan, but Ramphan said, "First give me the the marriage feast and then I will give you the marriage price." So her father said, "What can I do? Make and give me only a bamboo spoon and a bamboo rice-stirrer." So Ramphan made and gave him only a bamboo spoon and a rice-stirrer. That is why Ramphan and Mangtsilo only had one son and one daughter born to them.

7. THE TWO FRIENDS.

On-cheni eramo-chicho yantsai osi nungowo-chicho
Two-brothers elder-the poor but younger-the
elam to licho. Nungowo-chi-na ota-cho
much indeed was rich. Younger-the elder brother-the
nzam n-zehungo okamo-chi tai elam to nzana
comfort not-seeing (his) friend-the only much indeed loving
oni tai tyengtacho. Osi mbo-na nchokacho
they two only were friendly. But he one day
okamo-chi "A-kam, nchingo e-ni sheriti
(to) friend-the "My-friend, to-day we-two red berries
hloi tso-lo wotaka" to ezoa oni
having picked eat-to will go" thus having spoken they two

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wotacho. Chisilocho mbo-na otong-i chungo
went. Then he tree-in having climbed
sheriti-chi hloi tsoale na otsak
red berries-the having picked when eating and body
nzale to tssosi "A-kam, a-khangala"
when smearing thus having become "My-friend, I am falling"
to ezoa vanchole, okamo-na choi
thus having spoken falling, (the) friend having descended
mbo zesi "A-kam, e-ni chibo-poe
him having seen "My friend, we-two (of) clan-different
kama a-na-cho, koto i-n-zeka. A-na
because I, in any way you-will not-look after. I
oyi i-ta ezoa rotokuka," to
going your-elder brother telling will make to come," thus
ezosi mbo n-zeo sisi yicho. Osi
having said him not-looking after having left went. But
ota oyi ezoicho; ole ota-na owo
elder brother going told; then (the) elder brother going
zesi "A-ngo, lamm n-ramo nno
having seen "My-younger brother, love not-remembering you
okame-cho a-nzam a-n-zchungo i-kamo-
(when) alive my-comfort me-not-looking after your friend-
sho-mo nto tai nzanta tyentaracho," to ezoa
that-only you only loving were affectionate," thus having said
owo sükale chi-thang ongo-na
going while lifting up (at) that-time (the) younger brother
"A-ta, ntia ntssoka" to
"My-elder brother, what will become (i.e. is the matter)" thus
tyua panthiki ota-chi pulansi yicho.
saying having got up elder brother-the having picked up went.
Chitosicho okamo oni n-tyentao ota
After that friends they two not-being friendly brothers
oni tai elam to nzanta tyengtacho. Hochi-tssoko-
they two only much indeed loving were friends. This-being-
na nhungaliya kyou-na ekamo popo potsocheni nzanta
from till now men alive own relations loving
tyengta rata vancho n-chan to tyutala.
friendly cared not-like thus say.

There were once two brothers. The elder was poor, but the younger was very rich. The younger brother ignored the elder and kept all his care and affection for his friend One day the younger brother said to his friend, "My friend, to-day we will go and pick and eat red berries." So saying

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they went. The younger brother climbed the tree, and while he was picking and eating the berries smeared himself all over with the red juice. Then he called out: "Friend, friend, I am falling" and tumbled out of the tree. His friend climbed down and looked at him as he lay on the ground and said, "You are no relation of mine. I shall not look after you. I will go and tell your brother and get him to come." With these words he went away without attending to him at all. But his brother came and saw him, and looking at him said, "My brother, forgetful one, when you were alive you scorned and neglected me and kept all your love and affection for your friends." With these words he picked him up to carry him, but the younger brother said, 'Brother, there is nothing the matter with me," and got up and himself carried his elder brother home. Thereafter the friends were friends no more, but the two brothers loved one another. That is why men say that there is nothing in life equal to the love of one's own relations.

8. THE GIRL WHO MARRIED A TIGER.

Eloe ngarohang nchyua-na phendran-i
Woman pregnant a last year's field-to

phendkhyu-lo wole shomo hüngi
look for self sown vegetables-to when went (a) gourd seeing

hloa vancho. Tole mharr ntsanga-na oyi mbo
picked remained. Then tiger a coming her

hüngcho. Mharr-chi-na "A-shomo-la; nno nto luo shi
saw. Tiger-the "My-gourd-is; you what doing this

hloala? I-rhamka" to ezoa rhamacho.
are picking? (I) You-will-seize" thus saying seized.

Chisicho eloe-chi-na "A-na ngaro hamo-shi
Then woman-the "I child carrying in womb-this

vantoksi i-soa vantokuka.
having given birth to you marrying will cause to remain.

A-ti-rhama" to ezoa mharr-chi-ki mbo
Me-do not-seize" thus saying tiger-the-with her

vachitokcho. Chisicho eloe-chi-na ngaro-chi
made to leave go. Afterwards woman-the-from child-the

vancho. Hochi zoi mharr-chi-na eloe-chi
was born. This hearing tiger-the (to) woman-the

"Ngaro-chi van-n-vanha?" to tai engamungcho.
"Child-the (is) born-not-born?" thus only kept asking.

Eloe-chi-na mharr-chi "Ngaro-chi vantaka" to ezocho.
Woman-the (to) tiger-the "Child-the is born" thus said.

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Tole mharr-chi-na "Tona nhungo otsang otchhü-lo
Then tiger-the "Then now wood water-to

wowokoka na yanyanpikoka ?" to
is able to go and is ready to be given in marriage ?" thus

engacho. Tole eloe-chi-na "Nhungacho otsang otchhü-lo
asked. Then woman-the "Yet wood water-to

n-wokoka" to tai ezoa van-vansi
not-is able to go" thus only saying remaining-remaining

okaiti osi-na tyutai vachokama to nchama
at last before-from saying leaving indeed remembering

"Nhungo otsang otchhü-lo wokoktaka,
"Now wood water-to can go,

yanpikoktaka" to ezocho. Chisicho eloe-chi-na
can be given in marriage" thus said. Then woman-the

otsolo-chi yanpia-thang mpensi yitoko kilato
daughter-the marrying-time wearing to cause to go intending

ossü taka-thang "A-tsoi-cho mharr 'pang-i
cloth weaving-time "My-child-that tiger's mouth-into

thriosaka" to nchama nungra-tsanga esütchhü-na
has entered" thus thinking sad-miserable tears-with

ossü-chi zanzhya taka vancho. Opo-na ha hochi
cloth-the sprinkling weaving remained. Father too this

to nchama etsolo yanpia-thang hansi yitoko
indeed thinking daughter marrying-time carrying to cause to go

kilato esütchhü zana phari taka vancho.
indeed tears shedding carrying basket weaving remained.

Hochi hüngi otsolo-chi-na "A-pvü nno nto-tsso-na
This seeing daughter-the "My-mother you what-being-because

esütchhü zanato ? to engale opvü-na
tears are shedding ? thus when asked (the) mother

"A-ka tsirochonglong-na omhyek-i a-rakthechicho"
"My-child shuttle-with eye-in me-poked"

to mbo ezocho. Opo ha "A-po, nno
thus her told. Father too "My-father, you

nto-tsso-na esütchhü zanato" to engale
what-being-because tears are shedding" thus when asked

opo-na ha "A-ka omu-na omhyek-i
(the) father too "My-child bamboo strip-with eye-in

a-rakthechicho" to mbo ezocho. Chisicho opo ha
me-poked" thus her told. Afterwards father and

opvü oni-na mharr-thangi yanpia yitokcho.
mother both tiger-to marrying caused to go.

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Nzua-ria vansi onpoi-na otsoi eloe-roro
Year-about having remained (the) couple child girl-little

nchyua pokcho. Osi ngaro-chi-na oyo-na soa-na
a got. But child-the mother-with stayed-if

n-tya na opo-na soa-na tya to tai
not-crying and father-with stayed-if crying thus only

tssocho. Tole eng-na mharr-chi "Nno nto-tsso-na
was. Then wife (to) tiger-the "You what-being-from

a-ka tata tyatoka to" to ezole
my-child so much make to cry indeed" thus when said

mharr-chi-na "A-mehm-na tsoki tyaka" to
tiger-the "My-beard-with pricking cries" thus

eng-chi ezocho. Osi nchokacho eng-na chetha
(to) wife-the said. But one day wife secretly watching

vanle mharr-chi-na ngaro-chi nchüna kurri-lo
when remaining tiger-the child-the hearth stones head-on

thiphyi thiphyi echen zantoksila nnyak nnyak to
drip drip blood letting drop licking licking thus

tssoa vancho. Hochi eng-na hüngi mharr-chi sisi
being remained. This wife seeing tiger-the leaving

kilato "A-ka opo, a-na otsang-o woka;
intending "My-child's father, I wood-for am going;

a-ka sosi vanana" to ezole mharr-chi-na
my-child holding stay" thus when said tiger-the

"A-na role" to ezocho; na toka "A-na
"I am coming" thus said; and then "I

otchhü-lo woka, oli-[i] woka, na ora-i
water-to am going, field-[to] am going, and jungle-to

woka; a-ka sosi vanana" to ezolanle
am going; my-child holding stay" thus whenever said

mharr-chi-na chi ha "A-na role" to tai
tiger-the (to) that too "I am coming" thus only

ezoa mbo phanpimungcho. Osi nchokacho eng-na
saying her always accompanied. But one day wife

"A-ka opo, a-na pussü-shi tchhükha-i-na
"My-child's father, I carrying cloth-this spring-at-to

chowo etsika. A-ka soalo" to ezoa
going down will wash. My-child hold" thus saying

sotoksi tchhükha-i-na chowo orhak ntsanga
having made to hold spring-at-to going down louse a

na tezhu ntsanga to pussü-chi "tyak-tyak" khua
and flea a thus carrying cloth-the "plop-plop" saying

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etsia vantokcho. Mbo opoyang 'ki-[i] tsana
washing caused to remain. Her parents' house-[to] escaping
yicho. Tole mharr-chi-na orhak to na tezhu-to-chi
went. Then tiger-the louse indeed and flea-indeed-the
eng tsaya "A-ka opvü, a-ka
(his) wife (was) thinking "My-child's mother, my-child
tyaka, chungi zua" to ezosi
will cry, coming up give it to suck" thus saying
n-chungiale chowo zecho. Eng-chi n-vancho.
when not-came up going down looked. Wife-the not-remained.
Orhak to na tezhu to sakama "Nte
Louse indeed and flea indeed because were "You
hetonacho a-chithechiake" to tyua orhak-chicho
so much me-would deceive" thus saying louse-the
ehitsangi sicho, osi tezhu-chicho tsoka
crushing with his nail threw away, but flea-the jumping
yicho. Tole mharr-chi-na "A-ng hepi yiyi?"
departed. Then tiger-the "My-wife this way went?"
to olantaro enga enga phana wole topu-na
thus all asking asking pursuing when went all
"N-hung n-hung" to tai ezorasi okaiti
"Not-seen not-seen" thus only kept saying at last
sangalia engale chi-na "Nhungati shilo
the *sangalia* creeper when asked it "Just now hither
yiana" to ezoiki phana owe emangoti
came" thus having said (the tiger) pursuing going at dusk
opoyang ki nthango-na phayacho. Tole
(her) parents' house near-at caught up. Then
eloe-chi-na yungai opoyang ki-pang-na oyochi
woman-the running parents' house-door-at having arrived
"A-yo, chüro oki a-chonchia" to
"My-mother, coming out house (for) me-open" thus
ezothechile oyo-na "Ocho sana? 'Yo otsoi
when kept saying mother-the "Who is that? My child
n-vankama; etsoi-cho nkolo-na montakama" to
not-is; child-the before-from disappeared" thus
ezosi chüwo n-chonchicho. Tole otsolo-na
having said going out not-opened. Then daughter
"A-yo n-na nkolo nungo-thang woko-tsak
"My-mother you long ago (I) little-time pig-food
yengkok-na a-kho chilala" to ezoa phurro-pe-
spoon-with my-head hit" thus saying dog-entrance-

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khu-i-na peta thria vanle chi-thang
hole-in-at squeezing in entering when was that-time

mharr-chi-na och-woi na oyo-na chüro kurri-woi to
tiger-the leg-half and mother coming out head-half indeed

rhamasi tsangta-tsangtasi mharr-chicho ocho-woi na
having seized pull-pulling tiger-the leg-half and

oyo-cho kurri-woi to oni rangsotacho. Tole
mother-the head-half indeed they two pulled apart. Then

mharr-chicho mbo 'ki-[i] hanai vasi chakcha
tiger-the his house-[to] carrying keeping whisk

pensi peno-tia n-wotoko phana vansi
holding fly-a single not-letting come driving away remaining

shothecho. "O a-ka opvü, ekamocho chan
buried. "O my-child's mother, when alive relish

tssoliya oso-ngo tai i-tsotokcho;
for meat-and such like only you-caused to eat;

changram changricho i-n-tsotoka" to tyua
leaves vegetables you-not-caused to eat" thus saying

tya vanle eng oyona
weeping when remaining woman (i.e. the mother) coming

mharr-chi "Nno nto-tsso-na tya vanala?
(to) tiger-the "You what-being-from weeping remain?

'Yo e-ni rangsotao-chi heto ekhui tsoakama.
We we-two pulled apart-the thus cooking eat,

he" to ezoa oni rangsotao kurri-woi
now" thus having said they two pulled apart head-half

'so-chi echakaro ekhui hanao mharr-chi picho.
meat-the a little cooking bringing (to) tiger-the gave.

Tole mharr-chi-na "Eyo aka opvü 'so kama
Then tiger-the "Our child's mother's flesh because is

n-tso" to tyua van-vansi okaiti khi tsocho.
not-eat" thus saying remain-remaining at last taking ate.

Chitosicho mharr-chi-na "Kyon 'so-cho mhona yia',
After that tiger-the "Man's flesh-the good is"

to tyua mbo-na shothe-vao-chi mpato shochei
thus saying he buried-kept-the also digging up

tsosi kyon mpato rhami tsoa yicho. Hochi
having eaten men also seizing eating went. This

tssoko-na nhungaliya kothang-kothangnacho mharr-na
having been-from till now sometimes-sometimes tigers

kyon rhamala.
men seize.

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A woman one day went down to her field to fetch some vegetables. She saw a fine gourd there and was just going to pick it when a tiger saw her and said. "That is my gourd. Why were you going to pick it? I shall kill you." With these words he caught her. But the woman, who was about to become a mother, said "Do not kill me, and I will give you my baby when it is born." So the tiger let her go. In due time a daughter was born to the woman. When the tiger heard of this he kept asking the woman if her child was born yet, till at last she told the tiger that it had been born. Soon the tiger asked her if her daughter was strong enough to fetch firewood and water yet and whether she was old enough to be married. But the woman kept putting him off by saying that her daughter was not yet old enough to carry wood and water and was too young to marry; till at last she saw that she must keep her old bargain and admitted that the girl was old enough to work as his wife. As she sat weaving a cloth for her daughter to wear on her wedding day she was overcome with grief when she thought how her child would surely be killed and eaten by the tiger, and her tears fell fast on the cloth she was making. Her husband too was sad as he worked at a basket he was making for his daughter to carry when she went to her husband's house and his tears fell fast on the basket. When the girl saw this she said "Why are you crying, mother?" and her mother answered "I poked myself in the eye with my bobbin." To her father too the girl said "Why are you crying, father?" And her father replied "I poked myself in the eye with a slip of bamboo." Then when the day came her parents gave her in marriage to the tiger.

About a year later a little daughter was born to the tiger and his wife. When her mother carried her she never cried, but when her father carried her she cried all the time. So his wife said to the tiger "Why do you make our daughter cry so much?" The tiger replied "It is because my beard pricks her." But one day the woman hid herself and watched and saw the tiger knock his little daughter's head "tap, tap" against a hearth stone and lick up the blood which dripped down. When she saw this the woman determined to leave the tiger and said to her husband "I am going to fetch some wood. Hold the baby till I come back." But the tiger said "I am coming too." And whenever she asked him to look after the baby while she went to get water, or went to the fields or into the jungle, the tiger always replied "I am coming too," and never let her out of his sight. At last one day she asked him to look after the child while she went down to the spring to wash its carrying cloth.[1] So he took the child and she went

[1] The implication is that she would take the opportunity of bathing. It would not be proper for her husband to follow her.

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down to the spring and set a louse and a flea to wash the cloth, "chuck-chuck, chuck-chuck," while she ran off and made for her parents' house. The tiger, thinking the noise made by the louse and the flea was his wife washing the cloth, kept calling out, "The baby is crying. Come up and nurse it." But when she did not come up he went down to look for himself, and found his wife gone and the louse and the flea there instead. Then he said, "You would play tricks on me, would you?" and crushed the louse with his thumb-nail, but the flea jumped and got away.

Then the tiger set out to search for his wife and asked everyone he met whether they had seen her pass. All replied that they had not seen her, till at last he came to the *sangalia* creeper, who said she had just gone by that way. Then he chased and chased her till he came up with her at dusk at the door of her parents' house. The woman cried out, "Mother, come out of the inner room and open the door for me." But her mother replied, "Who is that? I have no daughter. My daughter disappeared long ago," and would not come out and open the door. Then the woman said again, "I am your own daughter, mother, whom years ago, when I was little, you hit on the head with the pigs' food ladle. Do you not know me now?" With these words she began to squeeze through the little opening by the door left for the dogs, but the tiger seized her legs while her mother seized her head and shoulders. And they pulled and pulled till she was torn in two and the tiger was left with her lower half and her mother with the upper half. Then the tiger took his half to his house and kept watch over it with a whisk so that not a single fly should settle on it, and buried it. And he wept, saying, "O my wife, when you were alive I loved you so much that I was careful always to give you good meat to eat as relish with your rice. You never had to eat leaves and such-like poor fare." But her mother said, "Why do you weep so? We have torn her in half. Now we will cook and eat her." And she cooked a little of the flesh from the upper half of the girl and offered it to the tiger, who refused it, saying, "How can I eat the flesh of the mother of my daughter?" But at last he ate it. Then he said, "Human flesh is good," and went and dug up the portion he had buried and ate that too. That is how the tiger came to eat human flesh, and that is why to this day tigers sometimes kill and devour men.

9. THE WOMAN WHO MARRIED A CATERPILLAR.

Eloe	nchyua-na	epue	nchyua-thangi	yampile
Woman	a	man	a-with	marrying

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epue-chi-na zamo-thang-cho kyon na engo-cho
man-the (in) night-time-the human being and (in) day-the

momo kam to eloe-chi-na n-tsia
hairy caterpillar turning-into indeed woman-the not-knowing

vancho. Osi nchokacho eloe-chi-na "Aiyo ochö
remained. But one day woman-the "I to-morrow

oyo choko woka" to tyusi yiple
leaves to pluck shall go" thus having said going to sleep

eng-ya-thang-cho orapvü-na vunga owo
(at) sun-rising-time-the (the) husband first going

momo kami cherhalomo-yo
hairy caterpillar having become vegetables-leaves

nkapchochi-rhui vasi nhyaka vancho. Ole
nipping off-leaving having put waiting remained. Then

eloe-chi-na owo cherhalomo-yo-chiang hungi, "Ei,
woman-the going vegetables-leaves-the having seen, "Oh,

momo-na nkapchochicho, heto khi hankila"
(a) hairy caterpillar has nipped off, this taking am carrying"

to tyua khi hansi yicho. Osi mbo-na
thus saying taking having carried went. But she

zamo-thang yipa-thang orapvü-chi "Aiyo nchingo
(at) night-time sleeping-time (to) husband-the "I to-day

cherhalomo-yo momo-na nkapchochi-rhui
vegetables-leaves (a) hairy caterpillar having nipped off-left

licho khi hansi yicho," to ezole,
were taking having carried went," thus saying,

chi-thang orapvü-na "Hochi ana-la" to ezocho.
(at) that-time (the) husband "That I-am" thus said.

Hochi-tssoko-na eloe-chi-na lamm n-tsso
This-being-from woman-the heart not-becoming (settled)

yipa-thang orapvü-chi engyhia engyhia chowo
(at) sleeping-time husband-the pushing pushing downward

omi engyhitechi rongtsangtokcho.
(into the) fire having pushed off caused to be burnt.

Chisilocho eloe-chi-na tso-yu-na etso-yu
After that woman-the eating-drinking-from food-drink

aku momo tsanchi tso-nhya-yu-nhya
every hairy caterpillar hair eat-swallow-drink-swallow

tso-nhya-yu-nhya to tssoa ekhutsangi
eat-swallow-drink-swallowing thus becoming coughing

tchhicho. Hochi-na nhungaliya ekhutsangka
died. This-because of till now if you cough

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" Momo-chi omi-na ti-rong," to
" Hairy caterpillar-the fire-with do not-burn," thus
tyutala.
(men) say.

A man and his wife lived together. Now at night the husband was a man, but in the day he turned into a hairy caterpillar. His wife did not know this One night before she went to sleep she said, " To-morrow I am going to gather some leaves for vegetables." Early in the morning her husband left the house first and turned into a caterpillar and nipped off the leaves and waited at the place. Then the woman came and at the sight of the leaves exclaimed, " Strange, a caterpillar has nipped off the leaves. I will take them and go." So saying she took the leaves and went. But that night when they were in bed she said to her husband, " To-day I found that a caterpillar had nipped off the leaves I went to gather." Then her husband said, " It was I." At these words she was greatly troubled, and when he was asleep she gently pushed and pushed her husband till he fell off the bed into the fire and was burnt. After that the woman swallowed caterpillar hairs with her food, whenever she ate, and coughed and coughed till she died.[1] Therefore nowadays if anyone coughs much people say, " You should not burn a caterpillar.'

10. THE OLD WOMAN AND THE *MORUNG*.

Eran-na tyutala Nungkamchung-o vana-thang emi
Old men say Nungkamchung-at living-time old woman
nchyua-na woko tsopo ekamchecho. Enga züro
a · pig big kept. One day (the) forty
champo-i-na emi woko-chi otsok-man epvucho.
morung-men old woman's pig-the rice-price took on credit.
Chisilocho emi-chi-na nchokapen " A-woko otsok-man
After that old woman-the every day " My-pig rice-price
epvu-chi a-pia," to züro champo-i
taken on credit-the me-give," thus (to) forty *morung*-men
ezole oten-na m-picho. Ole emi-chi-na yonchak
when said they not-gave. Then old woman-the iron
etsi-lo tiloran eshoi
staff-into sand and powder (i.e. magic powder) pouring
süsi owo champo thrrupya " A-woko
having taken going *morung* walking round " My-pig

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[1] The hairs of this caterpillar contain an irritant poison.

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otsok-man epvu-chi a-pia a-pia" to ezoa
rice-price taken on credit-the me-give me-give" thus saying
lenpya wocho. Chisilocho esangaro tai tssoa
tapping went. Then a little later only being
mpong-ki yipo-chi tai
(in) wind-house (i.e. front room of *morung*) sleeping-the only
tsoka chusi emi-chi-na yonchak
jumping up having come out old woman-the iron
etsi-lo tiloran eshoi lenpya wo-chi
staff-into magic powder having poured tapping gone-the
ntante menchoi kyon topu menzhuisicho. Osi oyan-na
so far earth opening men all were engulfed. But villagers
rhonche kilato oyan sani rhontala nchyua-tia
dig out intending villagers all digging one-even
n-rhoncheo leshu-chak ntsanga tai rhonchecho.
not-digging out thatch-wisp one only dug out.

Old men say that when the Lhotas lived at Nungkamchung a widow had a big pig. One day the boys of the *morung*[1] took the pig, promising to pay for it with rice. But they did not pay, though every day the widow came and said, "Give me the price of my pig which you bought for rice." At last she took her iron staff and poured magic powder into it and walked round the *morung* saying "Give me the price of my pig which you bought with rice. Give it, Give it," tapping the ground with her staff as she went. Suddenly the ground opened wherever she had tapped it with her staff containing magic powder and all the inmates of the *morung* were swallowed up, only those in the front room of the *morung* having time to jump to their feet and escape. Then the village all set to work to dig them out, but could not dig out a single man, only a wisp of thatch.

11. CHUNGAO AND THE WATER SPIRIT.

Ntonsito pochung tiroko aria yitaka Morakcho-i
About generations six so much gone by Morakcho-at
Chungao etsa-i nchyua-na Tchhüpfuo[2]-thangi okamo
Chungao name-by a (man) Water Spirit-with friend
tssocho. Mbo-na zhu-khu-i-na ngokung na ongo ekhu-
became. He pool-hole-in-from dried fish and fish cooked-

[1] *Morung* is the Anglo-Assamese term for the bachelor's house which each section of a Lhota village contains. It serves as a club and sleeping place for the boys and unmarried men and in the old days was used as a guard house. This institution is found in nearly all Naga tribes.

[2] Literally "Water Master',' a being like a man with hair of enormous length.

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cho to tai "Tchhüpfuo-na picho" to tyua hansi
the thus only "Water Spirit gave" thus saying having carried
yi mungcho. Mbo-na ngokung na ongo ekhu-chiang
came collected. He dried fish and fish cooked-the
Tchhüpfuo-thangi-na hansi yicho to ezo-na
Water Spirit-with-from having brought came thus saying-by
mbo oshom-chiang-na mbo yi-chi ko-thang ha
his friends-the his words-the any-time indeed
n-nangtsocho. Chitosi mbo-na mbo yi-chi chiangki
not-believed. Then he his words-the them
nangtsotoko kilato etyou tssocho. Mbo-na
would make to believe intending anxious became. He
oyamo kyon topu sosi tyozhu-lo Tchhüpfuo
villager's men all having taken fish-to (the) Water Spirit's
evamo ezhutsak-chi-lo wocho. Osi oten-na hochi-lo ono
lair pool-that-to went. But they that place-at poison
thethale ongo ha elam to hüngcho. Chi-thang
when they put fish indeed much indeed caught. That-time
mbo-na oyamo-chiang "Omi mhona tssota" to
he (to) villagers-the "Fire good let there be" thus
ezole oten-na omi tssocho. Ole mbo-na mi-cham
when he said them-from fire was. Then he fire-brand
khi pensi ezhu-chung-i thro-wocho. Esangaro tai
taking holding pool-bottom-to down-went. A little later only
tssoa mbo-na ngokung-chang-cho ha na ongo
becoming he dried fish-bundle-the both and fish
ekhu-cho ha to hansi chu-yicho. Chitosicho oten
cooked-the also thus carrying out-came. Then they
topu-na mbo-na nto tyucho sana hochi otsotso
all he what said was that true
Tchhüpfuo vampen-i-na hansi chu-yicho to
(the) Water Spirit's lair-at-from bringing out-came thus
nchamracho. Hochi-tssoko-na mbo myang-chi
believed. This-happening-from his name-the
"Tchhüpfuo okamo" to tsatacho. Osi mbo lap-chi
"Water Spirit's friend" thus was called. And his grave-the
ha nhungacha Morakcho-lo liya.
too till now Morakcho-at is.

All this happened about six generations ago. A man o Morakcho called Chungao was a friend of the Water Spirit He used to bring up from the river dried fish and cooked fish which he said the Water Spirit had given him. But his friends never believed him when he told them that the Water Spirit

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had given him these things, though he tried hard to persuade them that it was true. One day he took the whole village down to fish and they came to the very place in the river where the Water Spirit lived. There they put poison in the water and got a fine catch of fish. Then Chungao said to his companions "Light a big fire"; so they lit a big fire. From it he took a brand and plunged into the pool. Soon he came up with a bundle of dried fish and cooked fish. Then they all believed that he had spoken truly when he had said that the Water Spirit gave him these things and they nick-named him "Water Spirit's Friend." His grave is to be seen at Morakcho to this day.

12. THE FISHERMAN AND THE WATER SPIRIT.

Kyon nchyua-na osa sa-munga-lo tai
Man a fish trap fish trap-setting place-at only
nchunko tongcho. Osi nchokacho mbo-na sa-ranki-na
always set up. But one day he fish trap-shed-in
yipayisi panthile mbo nthango
having gone to sleep when he awoke him near
Tchhüpfuo zai vancho. Kyon-chi-na
(the) Water-Spirit standing was. Man the
"O Tchhüpfuo, ntia a-ti-zaptoke"
"O Water Spirit, anything me-to not-allow to come to harm"
to ezocho. Tole Tchhüpfuo-chi-na kyon-chi mpho-chi
thus said. Then Water Spirit-the (of) man-the sole-the
khokai zele cho-mpho-chi sena ntsanga
having lifted up when he saw foot-sole-the white clean
kama-shicho nchunko otchhü-i samphio sa-tong
being-the always water-by wandering fish trap-setter
saka to nchama "Nno nchunko shi-lo osa
was thus understanding "You always this-at fish traps
tongke, olia kyon ethan-cho ti-rotoke" to
go on setting, but man new-any do not-allow to come" thus
ezocho. Chi-sicho nchoka kyon ethan nchyua-na wocho.
said. This-after one day man new a went.
Tole Tchhüpfuo-na mbo ntoki cho-mpho-chi
Then (the) Water Spirit him having met foot-sole-the
khokai zele n-sen n-ntsangcho.
having lifted up when he saw not-white not-clean was.
Nto-tssole? Mbo ko-thanga otchhü-i
What-becoming (i.e. why)? He (at) any-time water-by
n-samphio-chi-na. Osi Tchhüpfuo-na kyon ethan
not-wandering-the-from. But (the) Water Spirit man new

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ro-na lamm n-tssoko to nchama vancho.
coming-from heart not-becoming indeed feeling was.

Hochi-tssoko-na mbo-na oki yile chi-zamo-na
This-becoming-from he home when he went that-night-at

tchhisicho to tyutala.
died thus (men) say.

There was once upon a time a man who always set his fish-trap in the same place. One night he awoke from sleep in his hut by the water and saw a Water Spirit standing near him, and cried out "Please do not hurt me, O Water Spirit." Then the Water Spirit lifted up the man's foot and saw that the sole was white and clean and understood that he was a fisherman who spent his life wandering by streams. So he said to the man "You are an old fisherman. Go on setting your traps. But do not let any new-comer set traps." A little later a new man came and met the Water Spirit, who lifted up his feet and looked at the soles and saw that they were brown and dirty, for he was a man who had never spent his days wandering by the streams. Then the Water Spirit was angry because a new man had come, so that the man died when he reached his home that night. That is the story.

13. THE MAN WHO VISITED THE WATER SPIRIT

Oyan tyozhu-lo wotale nchyua-na
(The) village (men) fish-to when went one (man)

ezhu-i ongo yana throwole ezhu-chung-i livero sena
pool-in fish seeking when dived pool-bottom-at dry sand white

kyon kurri etham-na nchü chami licho yanchecho. Osi
men's heads three-with hearth made was found. But

chilo Tchhüpfuo ha vancho. Ole chilo Tchhüpfuo chi-na
there Water Spirit also was. Then there Water Spirit-the

kyon-chi "A-kam, nhungo ti-throroke," to
(to) man-the "My-friend, now do not-come in," thus

ezoa ngokung changi pia
having said dried fish having wrapped up having given

chutokcho. Chisicho kyon-chi-na Tchhüpfuo-na
allowed to emerge. Then man-the (the) Water Spirit

ngokung changi pio-chi hana chui
dried fish having wrapped up gave-the carrying having emerged

oyamo kyon-chiang "Aiyo ezhu-i throwole a-kamo
(to) villagers men-the "I pool-in having dived my-friend

Tchhüpfuo 'ki yanchecho. Chicho livero sena
(the) Water Spirit's house found. There dry sand white

kyon kurri etham-na nchü chami lia, osi nhungo
men's heads three-with hearth prepared is, but now

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ti-throro to a-zocho" to tyuo oyamo-chiang
not-to come in thus me-told" thus having said (to) villagers-the
ngokung-chi picho. Osi mbo-na elani ngokung khi-lo
dried fish-the gave. But he again dried fish get-to
throwolanle chitosicho n-chuosicho.
when dived in after that did not-emerge.

A man who had gone down with the rest of his village to poison a stream dived into a pool to look for fish. At the bottom he came to a stretch of dry sand and saw the Water Spirit sitting near a hearth made of three human skulls. The Water Spirit said to the man "My friend, do not come in now" and tied up a present of dried fish and sent him away. Then the man came to the top with the dried fish which the Water Spirit had given him and said to his fellow villagers "When I dived into the pool I came to the house of my friend the Water Spirit There is a stretch of dry sand and a hearth of three men's skulls. But he told me not enter then." With these words he gave the dried fish to his fellow villagers and dived in again to get some more dried fish. But he never came up again.

14. THE WATER SPIRIT AND THE BOY.

Nchoka nungri nchyua-na Pofu-i ongo yana
One day boy a Diyung-to fish seeking
cho-wocho. Osi milani-cho elani oki-[i] n-yicho;
down-went. But (in) evening-the again home-[to] did not-come;
ole opoyang-na ekhentsangcho. Ochöato opo-na
then parents were anxious. Next day (his) father
oyamo sonhyasi owo yanala n-yanchecho.
villagers having taken with going seeking did not-find.
Chitosi opo-na otsotyungo 'mang-tia n-hüngo lamm
Then (the) father son's corpse-even not-seeing heart
ntsso mbo-ti Pofu-tsa
not-becoming (at ease) he-alone (along the) Diyung-bank
thrrua yana cho-wocho. Ole mbo-na otsan ntsanga
walking seeking down-went. Then he hair one
loko-i licho hüngcho. Mbo-na hochi otsotyungo 'tsan
ground-on was saw. He this (his) son's hair
tsaya tyokacho. Mbo-na otsan-chi ocham
supposing (to be) picked up. He (of) hair-the end
esana-tai-na khikale elam to sapocho. Hochi
one-only-by when he picked up veryi ndeed was long. This
mbo-na mbo yingdro-lo eyikacho. Mbo-na eyia
he his finger-on wound round. He proceeding

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eyia wole otsan-chi esi tchhü-kok tiza tssocho.
proceeding when went hair-the long river-bends eight became.

Otsan-chi Tchhüpfuo kurri-na n-sangchok-chi
Hair-the (the) Water-Spirit's head-from not-bound up-the

vacho sakama owo Tchhüpfuo chancho. Tole
was being going (the) Water Spirit reached. Then

Tchhüpfuo-chi-na kyon-chi "A-vachia" to ezole
water spirit-the (to) man-the "Me-release" thus when said

kyon-chi-na "A-tsoi-chi n-na sosi thrichokama
man-the "My-son-that you having seized plunging in

nna soa-chu-ro a-m-piocho i-n-
you seizing-emerging-coming me-not-giving you-not-

vachi" to ezoa rhamacho. Tole
will release" thus having said held (him). Then

Tchhüpfuo-na kyon-chi "I-tsotyungo a-na
(the) Water Spirit (to) man-the "Your-son I

soa-chu-ro hilo vantokuka; a-vachia;
seizing-emerging-coming here will cause to remain; me-release;

osi chi n-na a-n-nangtsa-na kyon-na nto mua
but this you me-not-believe-if men what forbidden

echham ta sana hochi a-chhamtoka" to
oath whatever is that me-you may make swear" thus

ezocho. Ole kyon-chi-na vachicho. Tchhüpfuo-chi-na
said. Then man-the (him) released. Water Spirit-the

mbo ngokung ngoyi na ngo-hamponi vao-chiang
his dried fish fresh fish and fish-relish kept-the

okamo pisi ezocho "A-na ochöa
(to his) friend having given said "I tomorrow

i-tsotyungo soa-chu-ro hilo vantokuka
your-son seizing-emerging-coming here will make to remain

n-na li-lo-wo-i ewolo oro hilo vana
you field-to-going-men when they go coming here is

hüngka" to ezocho. Osi kyon-chi-na Tchhüpfuo-chi-na
will see" thus said. But man-the Water Sprit-the

ezo-chi enga ochöa-to li-lo-wo-i ewolo
said-the obeying next day fields-to-going-men when they went

chilo wole otsotso otsotyungo chui vancho.
there when went truly (his) son having emerged remained.

Osi otsotyungo-na opo-chi ezocho "A-po,
But (the) son (to) father-the said. "My-father,

otchhü-i ongo tsapo hüngthechicho; hochi rhama-lo
water-in fish big (I) saw; that seize-to

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throwole hochi-na ezhu-chung-i lung-khu ntsanga-lo
when I dived in it pool-bottom-at stone-hole a-in
otchhü n-chüo chi a-süsi thricho. Chi
water not-being there me-having dragged kept. There
kyon kurri-na nchü chami tyingsorok-na licho; hochi
men's heads-from hearth made dry place-in was; that
Tchhüpfuo vanpen." Toala nungri-chi
(the) Water Spirit's lair." Nevertheless (to) boy the
ntia n-tsso n-zaptoko Tchhüpfu-
anything not-happening not-allowing to be harmed Water Spirit-
chi-na solana chu-ro nungri-chi opo oni
the bringing out emerging-coming boy's-the father they two
tyutao chilo vantokcho. Ole opo-na ochöa
saying there caused to remain. Then (the) father next day
to yana wole Tchhüpfuo oni tyutao chilo
indeed seeking when went Water Spirit they two saying there
chui vancho hüngi oki sosi yicho
having emerged remained having seen home having got went
to nhungaliya rutamungala.
thus till now (men) tell the tale.

One day a boy went down to the Diyung to fish. When he did not return home in the evening his parents became very anxious, and in the morning his father took some men down to search for him; but he was nowhere to be found. Then his father was sad at heart and went wandering alone along the Doyang, determined to find at least the dead body of his son. As he went he saw a hair on the ground, and picked it up, thinking it belonged to his son. But it was so long that he only picked up one end of it, and walked on winding it round and round his finger. He went on and on until he had passed eight bends of the river, so long was the hair. At last he came to a Water Spirit, for the hair was one of the Water Spirit's which he had forgotten to wind round his head. Then the Water Spirit cried out, "Let me go," but the man replied, "You have seized my son and taken him to your home in the water. I will not let you go till you bring him out and give him back to me." Then the Water Spirit said, "Let me go and I will bring your son and leave him here. If you do not believe me you may make me swear the most solemn oath known to men." At this the man let him go, and the Spirit gave him a gift of friendship, dried fish and fresh fish and fish paste, and said, "In the morning I will bring your son out of the water and leave him here. Come at the time when men go to their fields and you will find him."

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Obedient to the words of the Spirit the man came in the morning at the time when men go to their fields, and there sure enough was his son on the bank. The tale he told his father was this: "I saw a big fish in the water, and dived in and caught hold of it. It dragged me into a hole under the rocks in the pool, where there was no water. There on the dry sand was a hearth made of three human skulls. It was the lair of the Water Spirit." The Water Spirit had not hurt the boy, but had brought him out and left him on the bank, as he had promised to his father. So the father found his son safe by the side of the water and they both went back home. The tale is remembered to this day.

15. HOW THE VILLAGERS TRIED TO KILL APFUHO.

Oyan-na Apfuho etchüthechi-lo wüzü-i sosi wotacho.
Villagers Apfuho deceive-to pond-to taking went.

Osi oyamo langchang-na wüzü-i-na owo kozuta
But villagers all pond-at-from going swing

kozutasi Apfuho silamo kozutoksi oyamo-chiang-na
swinging Apfuho last making to swing villagers-the

Apfuho-chi wüzü-chongi elhungthei tchhitoko
Apfuho-that pond-into falling to cause to die

kilato n-zeo yiracho. Ole Apfuho wüzü-
intending not-looking went away. Then Apfuho pond-

chi-[i] elhungtheo tai tssoa kozua vanle
the-[into] falling only becoming swinging while remaining

chi-thang epue nchyua na eloe nchyua to pipo
that-time man a and woman a indeed ornaments

elam to pipo na tsiro ntsanga sheni
many indeed wearing and *mithan* a tied with rope

süta tosi sochota yia
bringing indeed having taken each other (i.e. eloping) coming

vancho hüngcho. Tole Apfuho-na "Ochiang sana toka?
were saw. Then Apfuho "Who are you?

Hepicho elam to zürozüiya mhonaka. Aiyo heto
Here much indeed breeze is good. I thus

kozuaka; ni-ni-ha pipo-chiang pongi na
have swung; you-two-also ornaments-the taking off and

tsiro-chi sheni va tosi oyak-i
mithan-the tying up keeping indeed forked stick-with

a-yichesi oro kozu-pi zeta" to ezocho.
me-pulling in coming swing-giving see" thus said.

Chisicho chi-to-ni-na Apfuho 'yi enga
Then they-indeed-two Apfuho's words hearing

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pipo-chiang pongi va ha tsiro sheni
ornaments-the taking off keeping and *mithan* tying up

va tosi owo Apfuho-chi oyak-i yichesi
keeping indeed going Apfuho-that forked stick-with pulling in

oni-na kozutacho. Osi oni-na "Yiche" to ezoala
they two swung. But they two "Pull in" thus saying

Apfuho-na n-yicheo wüzü-i elhungthei tchhitokcho
Apfuho not-pulling in pond-into falling caused to die.

Chitosi Apfuho-na chi-to-ni pipo-chi
Then Apfuho (of) them-indeed-two ornaments-the

pipo na tsiro-chi sü tosi oyan-i
putting on and *mithan*-the taking indeed village-to

yicho. Ole oyamo kyon-na emhokta "Apfuho,
went Then (the) villagers men surprised "Apfuho,

nno kulo-na pipo hetata na tsiro to
you where-from ornaments so many and *mithan* indeed

yanchei hansi yichoato?" to engacho. Tole
having got bringing have come?" thus asked Then

Apfuho oyamo-chiang "Wüzü-chongi-cho pipo ha
Apfuho (to) villagers-the "Pond-in-the ornaments both

elam to li na tsiro ha elam to van;
many indeed are and *mithan* also many indeed are;

toala a-na shi-tai khi hansi yi-na nte
nevertheless I this-only taking carrying came-if you

khi-hng-na nte ha owo wüzü-chongi throwotakato"
take-wish-if you also going pond-into plunge down"

to ezocho. Chisilocho oyamo kyon topu-na
thus said. After this villagers people all

Apfuho-chi "Apfuho, toka a-na a-sosi
(to) Apfuho-that "Apfuho, then I (want some) me-taking

woa, a-na a-sosi woa" to ezoracho. Ole
go, I (want some) me-taking go" thus kept saying. Then

ochö-rachö to
to-morrow-the day after to-morrow (i.e. a few days later) indeed

Apfuho-na oyamo-chiang topu wüzü-chi-[i] sokhansi
Apfuho villagers-the all pond-the-[to] taking

owo otsak aku wüzü-chongi echam echami
going all every pond-into picking up picking up

shamthechisi enato thri-na chiango "Chicho pipo
throwing in slowly sank-if (of) them "That one ornaments

na tsiro mhonkhango-cho n-yanche" to ezo; na
and *mithan* very good-the not-gets" thus said; and

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elam to ethon pia ehraktsanga thri-na chiangcho
much indeed struggle giving spluttering sinking if (of) them
" Hochi-na pipo na tsiro mhon-tso-chi
" That one ornaments and *mithan* good-truly-the
yanchekache " to tyua kyon-chiang topu wüzü-chi-i
has got " thus saying people-the all pond-the-into
shamthechikhani tchhiratokcho. Osi eson
having thrown caused to die utterly. But old (woman)
mhyekchung nchyuacho tchhü-tsai epopya
blind a water-by the side of groping
etyanpya vanle Apfuho-na hochi mha-tungi
feeling her way when was Apfuho her face-in front of
owo yonkitam ntsanga vaicho. Ole hochi-na
going old *dao* a put. Then she
hochi etyancheki " Ei, a-na samona kama
this touching " Oh, I even being able
ekamo elam to
live men (i.e. in possession of all their senses) much indeed
yancheraosala " to tyucho. Chi-thang Apfuho-na
are surely getting " thus said. That-time Apfuho
chi-mpato owo " Ei, eson ha heto thro-woa
her-up to going " Oh, old (woman) also thus in-go
kama tchhü-tsai nto luato ? " to
if able water-by the side of what are doing ? " thus
ezoa rhamai wüzü-chongi shamthechi chi ha
saying seizing pond-into throwing her too
tchhitokcho.
caused to die.

The villagers, meaning to put an end to Apfuho,[1] took him with them down to a big pond. Then when they got to the water they all began swinging out over the pool on a creeper swing. They made Apfuho use the swing last and went away and left him, thinking he would fall off into the middle of the pond and be drowned. Apfuho kept swinging and swinging and could hardly hold on any longer, when he espied a man and a woman wearing fine ornaments and leading a *mithan*[2] by a rope. He saw that they were an eloping couple and called out to them, "Who are you? There is a beautiful breeze here which makes swinging very pleasant. Take off your ornaments and put them on the ground and tie up the *mithan*. Then pull me in with a hooked stick and come and

[1] A mythical mischievous character, who is the subject of many tales. He corresponds to Tki in Sema tales.
[2] The domestic bison (*bos frontalis*).

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have a swing yourselves." So they did as Apfuho told them, and took their ornaments off and put them down and pulled Apfuho in with a forked stick; and both began to swing.

But when they asked Apfuho to pull them in, instead of doing so he let them fall into the water and drown. Then Apfuho put on their ornaments and took their *mithan* and went up to the village. And the villagers were astonished and said, "Where have you come from with those ornaments and that *mithan*, Apfuho?" And he said to them, "In the middle of the pond there are many ornaments and many *mithan* too. I only brought away these. If you too want to get some you should go and dive into the pond. "Then all the villagers said to him in chorus, "Take me, Apfuho; take me, Apfuho." So a few days later Apfuho led the villagers in a body down to the water. There he picked them up one by one and threw them in. Of the men who sank quietly he said, "The ornaments and *mithan he* gets won't be very good" But when people struggled hard, with the water pouring from their mouth and nose, he said, "The ornaments and *mithan he* gets will be splendid." So he let all the people of the village whom he had thrown into the water drown.

Now a blind old woman was stumbling along, feeling her way by the water's edge. Apfuho put an old worn dao in front of her, and when she found it as she groped she said, "Well, if a person like me can find this, people with no infirmities will get a lot." Then Apfuho went up to her and said, "Now, old woman, you go in too. What are you doing on the edge?" and with these words he caught her and threw her into the middle of the pond so that she was drowned.

16. HOW APFUHO TRICKED THE VILLAGERS.

Oyan-na Apfuho etchüthechi omi-ki
(The) villagers Apfuho deceiving fire-with
rongtsangtoko kilato oli ri-chi nchok
would make to burn intending fields burning-the day
Apfuho 'yak chungo wotokcho. Tole Apfuho-na
Apfuho forked tree climbing made to go. Then Apfuho
owo oyak-chi chungo echangpisila
going forked tree-the climbing having pruned a little
"Ayo, a-lepok-ro-chi esoktaka"
"Dear me, my-*dao*-little-the has come out of its handle"
to tyua choi loko-chi
thus having said having descended ground-the
chi-chi to tssocho. Heto oyan-na oli
digging-digging thus became. Thus villagers fields

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richiale mbo-na oyak-i-na choi loko
while burning he tree-in-from having descended ground
chi-ochi-lo thri 'lung tyak-ki hlaplanchi
dug the-in having entered stone flat-with having closed
vancho. Chisicho omi-chi paktokale
remained. Afterwards fire-the when (they) allowed to abate
mbo-na vunga chui seno omi-na
he first having emerged (a) barking deer fire-by
rongtsangi licho tyoi hansi oyi
burnt was finding having carried having gone
lanrhu-lo oso-cho ora-i mphoi vasi
cross roads-at meat-the jungle-in having hidden having kept
errü-chi-ki mbo mman-i shakai
entrails-the-with his stomach-on having spread
hansi nthikoro yipa vancho.
having carried on his back lying down remained.

Taratssosi oyan-na oyi zesi lom-na
A little latter (the) villagers having come having seen some
"Apfuho nzanti" to tyu, lom-na "Apfuho ha nchingo
"Apfuho (I) pity" thus saying, some "Apfuho too today
mbo mhona-chi" to tyuta yirachok Chisicho
his good-the" thus saying passed on. Afterwards
Apfuho-na panthi mbo-na oso ora-i
Apfuho having got up he meat jungle-in
mphoi vao-chi khi hanai "Apfuho nzanti"
having hidden kept-the taking carrying "Apfuho (I) pity"
to tyu-chiango ozu pi na "Apfuho-ha nchingo
thus (to) saying-the meat giving and "Apfuho-too to-day
mbo mhona-chi" to tyu-chiango orru pi to
his good-the" thus (to) saying-the bone giving thus
tssocho. Chitosi oyan-na oso-chi tsokhantakle
became. Later (the) villagers meat-the when had eaten up
"Oso nte-pio-chi a-pia; chi n-li-na otsok
"Meat (to) you-given-the me-give; that not-is-if rice
a-pia" to ezoa otsok chonrhui khia
me-give" thus having said rice having demanded taking
wocho. Osi emi nchyuachicho "Apfuho-cho
went. But old woman a certain "Apfuho-that
n-kantsila" to tyua oso-chi vasi vanle
(I) not-do trust" thus saying meat-the having kept while was
Apfuho-na owo "Oso i-pio-chi a-pia; chi
Apfuho going "Meat (to) you-gave-the me-give; that

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n-li-na otsok a-pia" to ezoa chonle
not-is-if rice me-give" thus saying when demanded
emi-chi-na "I-so-chi shi-ka lo" to
old woman-the "Your-meat-the this-indeed look" thus
ezoa hana chu-ro pile Apfuho-na
saying bringing emerging-coming when gave Apfuho
nhyapang-ki ekhosi yicho.
dao handle-with having struck went.

His fellow villagers plotted to get Apfuho burnt to death. So on the day when the jungle on the land to be sown that year was to be fired they persuaded him to go down to the place and climb into a tree. But he saw their plot and kept lopping a few branches off the tree and saying "Dear me, my *dao* has come out of its handle." Then he would come down and dig away at a hole in the ground. When the villagers set fire to the jungle he came down from the tree and got into the hole and closed the mouth with a flat stone. When the fire had burnt itself out he came out and found the body of a barking deer which had been caught in the flames and burnt.[1] This he carried up to the village path and cut up the meat and hid it in the jungle. Then he lay down in the path on his back and put the entrails of the deer on his stomach and feigned dead. And when the villagers coming up along the path saw him some said "Poor old Apfuho," and some said "We have made a good job of Apfuho at last" and passed on. When they had gone Apfuho got up and took the meat which he had hidden in the jungle and went up to his house. To everyone who had said "Poor old Apfuho" he gave a piece of good meat as his share and to everyone who had said "We have made a good job of Apfuho at last" he gave a piece of bone.

Then he waited a day or two until everyone had eaten up their presents of meat and then went round the village and pretended he had sold the meat instead of giving it, and said to each man "You must give me back my meat, or if that has gone pay me in rice." But there was one old woman who thought to herself "Apfuho is not to be trusted" so she kept her piece of meat, and when Apfuho came round asking for his meat, or its price in rice she said "Here is your meat" and gave it to him. Then Apfuho in anger hit her with his *dao* handle and went away.

17. APFUHO AND THE TIGER.

Nkolo kyon tsongora n-tyunta-thang motsü.
Formerly man animals not-separate-time story.

[1] Animals and birds are often caught in these fires.

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Mharr to na Apfuho to ochen shano
(The) tiger indeed and Apfuho indeed vats to make
zukhu pankai wotacho. Owo ochen
river having crossed went. Having gone vats
shani vasi, mharr-chi-na Apfuho, "Kotoli
having made having left, tiger-the Apfuho, "How
hamla?" to engacho. Apfuho-na mharr-chi
do (I) carry?" thus asked. Apfuho (to) tiger the
"Tonkachho hanakama" to ezoa tonkachho
"Top up carry" thus having said top up
hantokcho. Mbo ochen-chi chenchho hansi
made to carry. He vat-the upside down having carried
otchhü-chi tyenga chucho. Osi mharr-chicho ochen-chi
water-the crossing emerged. But tiger-the vat-the
tonkachho hansi chi-lo otchhü thri otchhü-chi
top up having carried it-in water entering water-the
tyenga chu-na n-chuche, tyenga
crossing emerging-from (did) not-emerge, crossing
chu-na n-chuche to tyenga vanle,
emerging-from (did) not-emerge thus crossing while was,
Apfuho-na "A-na i-yicheka" to ezoa
Apfuho "I you-will pull out" thus having said
ochen-chi-lo olung penthechiale na oyak-i
vat-the-in stones throwing and forked stick-with
tyanthechi to tssoa otchhü-ki pfua
having pushed thus becoming water-with floating
yitokcho. Chito-si Apfuho-na mharr-chi tchhitchhianato
made to go. That-after Apfuho tiger-the was dead or not
zeta cho-wole tchhü-tsai pfua chu
to see down-going water-by the side of down stream emerged
vansi mbo hüngale "A-moratsamo-chi shi" to
being him seeing "My-enemy-the this" thus
tyua mbo rhamale, Apfuho-na chi-thang
having said him when seized, Apfuho that-time
tchhü-tsai tsakmen zuncho hünga-chi "A-motzü,
water-by bees' nest saw-the "My-grandfather,
aiyo züro champo-i-na otyang-shi oyam
I forty *morung*-men drum-this other men
ti-tampitoke to a-zoa otyang-shi
must not-allow to beat thus me-telling drum-this
a-nhyaktokala" to ezocho. Tole mharr-chi-na
me-are causing to watch" thus said. Then tiger-the

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"Toka, a-na tampi zetane?" to engale Apfuho-na
"Really, I beating may see?" thus asking Apfuho

mharr-chi "A-motzü, a-na oyi züro
(to) tiger-the "My-grandfather, I going forty

champo-i engasaka; osa. Osi züro champo-i-na
morung-men will ask; stay. But forty *morung*-men

tampi to tyu-na a-na i-zochika," to ezocho.
beat thus say-if I you-will tell," thus said.

Tole mbo-na ekoni-na oyi "A-motzü,
Then he far-from having gone "My-grandfather,

züro champo-i-na tampia to" to ezochicho.
forty *morung*-men beat thus (say)" thus said.

Chisicho mharr-chi-na tampile tsakmen-chiang-na mbo
Then tiger-the beating bees-the him

taktsangi tsantsansi tsantsansi lungrheni-na ekhangtsangi
stinging running running cliff-from having fallen

tchhicho.
died.

This is a tale of the olden days when men could understand the talk of animals. Apfuho and the tiger went across a river to hollow out vats out of a log on the other side. When they had finished their vats and the time came to return the tiger asked Apfuho the best way to carry his vat across the river. Apfuho told him to carry it rim upwards, and the tiger did as Apfuho told him. But Apfuho carried his own vat upside down and was able to cross the river, while the tiger try as he would could not cross the river with his vat rim upwards. Apfuho called out "I will pull you out," but instead of doing so he threw stones into the tiger's vat and pushed him away from land with a forked stick so that he was washed right down stream. Then Apfuho went along to see if the tiger was drowned or not, and found him lower down by the water's edge. When the tiger saw Apfuho he cried "Here is my enemy," and tried to devour him. But at that moment Apfuho espied a bees' nest by the water and said "The men of the *morung* have set me to watch this *morung* drum, father tiger, and see that no stranger beats it." Then the tiger said "May I beat it and see what it is like?", and Apfuho replied "I will ask the men of *morung*. You stay here, and if they say you may beat it I will shout and tell you." So he went a long way off and shouted back "They say you may beat it." Then when the tiger hit the bees' nest all the bees attacked and stung him and he ran and ran until he fell down a cliff and was killed.

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18. HOW APFUHO SHARED SOME MEAT WITH THE TIGER.

Apfuho ha mharr oni ora-i wotale
Apfuho also tiger they two jungle-in while going
sorachak tyocho. Chisilocho sorachak-chi oni
(a) kill found. Then kill-the they two
chitale, Apfuho-na mbo echi-lo-cho ozu tai
when dividing, Apfuho his own share-in-the meat only
larhui the na mharr echi-lo-cho orru tai larhui
carving setting aside and tiger's share-in-the bone only carving
thei to tssole chi-thang mharr-chi-na
setting aside thus when becoming (at) that-time tiger-the
"Nni ha khiaka; a-po titai a-thea to" to
"You too take; my-own only (for) me-leave thus" thus
ezoa chitatokcho. Tole mharr-chi-na "Apfuho,
having said allowed to divide up. Then tiger-the "Apfuho,
kotoli hantaola?" to engale Apfuho-na
how shall we carry?" thus when asked Apfuho
"Okhyu ezalo nrakai the hana"
"Bamboo basket leaving attached having made putting carry"
to ezoa okhyu ezalo nrakatoksi
thus having said basket leaving attached having caused to make
mbo khyu-tong langi nrai oso-chi thei
his basket-tree having cut having made meat-the putting
hanai oki otsok-man yencho. Osi mharr-chicho
carrying home (for) rice-price sold. But tiger-the
oso-chi okhyu ezalo nrakao-chi-lo thei
meat-the basket leaving attached made-the-in putting
hankai zesila n-hankakok-na "Shi-na
carrying away seeing not-could carry away-because "This one
alo, Shi-na alo" to tyua so-khyu ntsang-
is it, This one is it" thus having said meat-pieces one-
ntasanga khichei orru-chi nkaksila si
one taking out bones-the gnawing throwing away
nkaksila si to tsso-tssosi okainacho
gnawing throwing away thus having become-become at last
orru ntsanga tai n-nkaknhyui oki hansi yicho.
bone one only not-gnawed home having carried came.

Apfuho and the tiger came upon a kill in the jungle. They set to to divide it between them, but Apfuho cut off and laid aside nothing but meat for his share and gave the tiger nothing but bone. The tiger only said "Take plenty yourself. Do not

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give everything to me," and let him go on dividing up the meat. Then said the tiger "How shall we carry it, Apfuho ?" Apfuho replied "Split a bamboo and make a basket of it, but do not cut it free from the root. Then put the meat in that and carry it up." So the tiger made a basket without cutting tho bamboo off at the root, but Apfuho cut his own bamboo off when he made his basket, and put the meat in that and carried it home and sold it. But the tiger put his meat in his basket without cutting the basket free and tried in vain to carry it. "It must be this, it must be this" he kept saying, as he took out the pieces of meat one by one and gnawed the bones and threw them away, till he had eaten all the meat and at last only had one piece of bone left to carry up to the village.

19. APFUHO AND THE OLD WOMAN.

Nchoka emi-na otsi rukachi vasi penching
One day old woman rice cooking having kept oil seed
chena vanle, Apfuho-na 'yam phurro
pounding when remaining, Apfuho another's dog
tatsangi hansi owo emi-chi
having killed carrying coming (to) old woman-the
"I-tsi-chi elakchyala" to ezocho. Tole
"Your-rice-the is boiling over" thus said. Then
emi-chi-na otsi-chi ze-lo thria-thang-na Apfuho-na
old woman-the rice-the see-to enter-time-the Apfuho
phurro-chi hanao tsamboku-i thechi vaisi,
dog-the carrying pounding table-on placing having kept,
"Emi, i-penching-chi phurro-na tsoala" to
"Old woman your-oil seed-the (a) dog is eating" thus
ezocho. Ole emi-chi-na yungachi zesi, Apfuho-na
said. Then old woman-the running having seen, Apfuho
phurro tatsangi hanao tsamboku-i thechi
dog having killed carrying pounding table-on placing
vai-ochi erhapthechicho. Osi chisicho Apfuho-na
put-the struck. But then Apfuho
emi-chi ezocho "Hayo, hayo, n-na 'yam
(to) old woman-the said "Alas, alas, you another's
phurro tatsangta-kama i-woko-chi a-m-piocho a-na
dog have killed-because your-pig-the me-not-giving I
'yam ezoka" to ezocho. Tole emi-chi-na
the other man will tell" thus said. Then old woman-the
"A-woko-chi i-pika; oyam ti-zo" to
"My-pig-the you-will-give; the other man do not-tell" thus

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ezocho. Tole Apfuho-na mangsa-thang woko-chi khi-lo
said. Then Apfuho evening-time pig-the fetch-to
woa-thang olan-i mi-lon elamo rena nchakarhui
going-time path-on fire-torches many arranging having lighted
vasi owo "Emi, n-na i-woko-chi
having put going "Old woman, you your-pig-the
a-m-pi-na 'yam hetata olan-i mi-lon penrasi
me-not-give-if villagers so many path-on fire-torches carrying
tsaka, zeta" to ezole emi-chi-na "A-woko-shi
are coming, look" thus when said old woman-the "My-pig-this
i-pika; "ti-ro" to owo ezoa" to ezole
you-will give; "do not-come" thus going say" thus when said
mbo-na owo mi-lon-chiang tamhekhani sisi
he going fire-torches-the having put out having thrown away
oyi woko-chi rhamai khicho. Osi woko-chi hankata-thang
coming pig-the seizing took. But pig-the carrying-time
mbo-na "Emi-tacholam" to tyua hankale,
he "Old woman-fool" thus saying when carrying,
emi tsoi-chi-na "A-pvü, shi-na
old woman's daughter-the "My-mother, he
'Emi-tacholam' to tyuala" to opvü ezocho.
'Old woman-fool' thus says" thus (to her) mother said.
Apfuho-na zoi "Ei nungria 'acho' to
Apfuho hearing "Now, now, girl 'all right' thus (I)
tyuna" to nungri-chi ezole opvü-na "Ho, ho,
said" thus (to) girl-the when said (the) mother "Ho, ho,
Apfuho-na 'acho' to tyucho" to ezoa mbo woko-chi
Apfuho 'all right' thus said" thus saying her pig-the
Apfuho hansi yitokcho.
Apfuho carrying allowed to go.

One day an old woman set her rice on the fire to boil and went into her outer room to pound oil seed. Apfuho came along carrying another man's dog which he had killed, and called out to the old woman, "Your rice is boiling over." When the old woman went back into the inner room to look at her rice, Apfuho put the dog which he was carrying on her pounding table and called out, "A dog is eating your oil seed, old woman." Then the old woman came running out to see, and hit the dead dog which Apfuho had put on the pounding table. At this Apfuho cried out, "Oh dear, oh dear, you have killed another man's dog. If you do not give me your pig I will tell the owner." So the old woman said, "I will give you my pig. Do not tell the owner." At dusk when Apfuho came to fetch the pig he fixed lighted

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torches all along the path, and said to the old woman, "Give me your pig. Look how many men are coming with the owner of the dog, carrying lighted torches in their hands." To this the old woman replied, "I will give you my pig. Go and tell them not to come." So he went and put out the torches and threw them away, and came back and took the pig. But as he was taking the pig away he murmured, "What a fool of an old woman." Her daughter heard this and said, "He called you an old fool, mother." But Apfuho heard her say this and replied. I only said 'oo', girl,"[1] and the mother said, "Yes, yes, Apfuho only said 'oo'." So Apfuho went off with the pig.

20. SITYINGO AND NGAZO.

Sityingo ha Ngazo oni oshyu chi-lo
Sityingo also Ngazo they two bamboo rats dig-to
wotacho. Ole Sityingo-cho lamalo chiche, osi Ngazo-cho
went. Then Sityingo-that many dug, but Ngazo-that
engalang chicho oshyu-ro ntsanga tai chichecho.
all day long dug bamboo rat-little one only dug out.
Tole Ngazo-na Sityingo-chi "Aiyo shi tai nno
Then Ngazo (to) Sityingo-that "I this only you
tata chiche" to ezoa echücho. Ole Sityingo-na
so many dug out" thus saying showed. Then Sityingo
Ngazo-chi "Chi ha a-na i-pichoki" to ezocho.
(to) Ngazo-that "That also I you-gave" thus said
Tole Ngazo-na "A-na engalang chichisi chiche-na
Then Ngazo "I all day digging dug out-after
n-na a-picho-ani" to ezocho. Osi Sityingo-na
you me-gave-in truth" thus said. But Sityingo
"Toka a-na i-picho-mak-na vachi zei" to ezole
"Then I you-gave-not-if letting go see" thus when said
Ngazo-na Sityingo 'yi enga vachicho. Oshyu-
Ngazo Sityingo's words hearing let go. Bamboo rat-
ro-chi loko-i yua thresicho, osi Ngazo-na
little-the ground-in burrowing entered, but Ngazo
oshyu-ro-chi chia chia phanala n-chicheosicho.
bamboo rat-little-the digging digging chasing not-dug out.
Tole Sityingo-na Ngazo-chi "A-na i-picho-mak-na
Then Sityingo (to) Ngazo-that "I you-gave-not-if

[1] The play upon the words cannot be reproduced in English. Apfuho really said "*emitacholam*" ("What a fool of an old woman!"), and then got out of his difficulty by pretending he had only uttered the middle syllable "*acho*," which is an exclamation like the English "Oh!"

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n-chicheta to" to ezole Ngazo-na lamm
not-dug out indeed" thus when said Ngazo anger
tsoki oni eyatacho. Ole Ngazo-na Sityingo
getting they two wrestled. Then Ngazo Sityingo's
evung nyalepisicho. Chi-tssoko-na Sityingo-cho poko
neck twisted. This-being-from Sityingo-that one way
tai zechiala, to tyutala. Kyon-na nhungacha
only looks, thus (men) say. Men till now
Sityingo-na zechiyo olantaro mhala osi
Sityingo looking at (them) something get but
Sityingo-na n-zechiyo olantaro ntia
Sityingo not-looking at (them) something anything
m-mhala to tyutala.
not-get thus say.

Sityingo[1] and Ngazo went to dig for bamboo rats. Sityingo caught many, but Ngazo, though he dug all day, only got one. Then Ngazo said to Sityingo, "I have only caught this and you have caught so many," and showed him the rat. Then Sityingo replied: "Even that you only got because I gave it to you" To which Ngazo replied, "What, I have dug out this rat after digging all day and you say you gave it to me!" "Then let it go," said Sityingo, "and see whether I gave it you or not." So Ngazo let it go as Sityingo said, but the rat burrowed into the ground, and Ngazo, though he dug and dug after it, could not catch it again. Then said Sityingo, "You say I did not give it you and yet you cannot dig it out!" At these words Ngazo became angry and they fell to wrestling, and Ngazo twisted Sityingo's neck. That is why Sityingo can only look one way. Men say to this day that a hunter towards whom Sityingo looks is sure to get something, but that he from whom Sityingo's face is turned away will get nothing at all.

21. THE CHILDREN WHO TURNED INTO CATFISH.

Kyon nchyua-na nungri yenga mbo 'li socho.
Man a children band (to) his fields took.
Ole oli owo chonta-chontasi nshi thangale
Then (to) field going working-working midday-meal at time of
otsi nshitoko tyutacho. Tole opfui-chiang-na nshi
rice allow to eat said. Then owners-the midday meal

[1] A sort of godling who owns wild animals as men own cattle. He is like a man with very long fingers and spotted all over. Ngazo is practically identical with him.

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n-thang ha to ezoa otsi-chi n-nshitokcho.
not-time indeed thus having said rice-the did not allow to eat.

Chi-icho nungri yenga-chiang-na tsaka-lo wo tyutachei
Then children band-the wash-to going having said

oten topu-na tsaka-lo wokhancho. Osi oten-na "Otsi sito
they all wash-to went off. But they "Rice quickly

e-n-nshitokaka zyümo kamtane," to tyuta
us-not-allowed to eat catfish let us become," thus saying

"Zyümolili, "zyümolili" to khuta zyümo kamayicho.
"We are catfish, we are catfish" thus calling catfish turned into

Ole opfui-chiang-na "Otsi nte nshitokoka, yita"
Then owners-the "Rice you (we) will allow to eat, come"

to ezoa tsale nungri yenga-chiang-na
thus having said when they called children band-the

"Nte-na nthangna e-n-nshitokcho kama, 'yo nhungo
"You just now us-not-allowed to eat because, going now

kyon etso-yu n-ntsi kama n-yi" to
man's food-drink not-knowing because will not come" thus

ezoa zyümo kamayicho. Hochi-na nhunga
having said catfish turned into. This-because of nowadays

zyümo-na lechap essa mbao shi nkolo
catfish-on *dao* holder like being this once upon a time

nungri yenga-na lechap hanrasi zyümo kamayicho-
children band *dao* holders wearing catfish turned into-

na heto mbapo tssoala to kyon-na rutala.
because so always is thus men tell.

A man took a band of children down to his fields to work. When they had worked all morning and it was time for the midday meal they asked him to give them their rice. But the owner of the field and his family said it was not yet time and would not give them any rice. Then the children said they were going to bathe and all went off, and said "They would not give us our rice in time so we will become catfish." With these words they turned into catfish, calling out "We are catfish, we are catfish." The owner of the field called out "Come along, I will give you your rice," but the children replied "You would not give it us before. Now we have forgotten about men's food. We will not come," and off they went in the form of catfish. Men say it is because these children were wearing *dao*-holders when they were turned into catfish that these fish always have a mark on them like a *dao*-holder.

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22. HOW CHILDREN TURNED INTO MONKEYS.

Onpoi-na otsoi epue tsaka eloe tsaka to
Man and wife children male one female one indeed

poki vasi eloe-chi tchhicho. Tole epue-chi-na
having got kept wife-the died. Then husband-the

eloe-chi tchhicho silo eloe ethan soa vancho. Ole
wife-the died after wife new marrying remained Then

eloe ethan-chi-na eloe etchhio-chi 'tsoi-t-oni-chi
wife new-the (of) wife dead-the children-two-the

n-nzam elam to kangshi ntsoshicho. Osi
not-caring much indeed persecution gave. But

nchokacho mbo-na nungri-t-oni "Li-nhyako wota,
one day she children-two "Fields-to watch go,

otsi-cho a-na eng-aku ni-ni hantokmungka,
rice-the I day-every (for) you-two will have carried down,

oki-(i) ti-yitake" to ezoa wotokcho.
house-(to) do not-come" thus having spoken made to go.

Chisilo mbo-na otsi kilato ziro-chü
Then she rice calling it (i.e. instead of) rat-dung

hono-chü na maku to tai nkap-nkapi
fowl-dung and husks thus only wrapping-wrapping

nungri-t-oni hantokmungcho. Tole nungri-t-oni-na
(for) children-two had carried down. Then children-two

eng-aku mbo-na otsi kilato ziro-chü hono-chü na
day-every she rice calling it rat-dung fowl-dung and

maku to nkap-nkapi hantokmung-chi
husks indeed wrapping-wrapping had had carried down-the

lanphe-lanphei zesisicho. Chisilocho nungri-t-oni kyon
opening-opening saw. Thereafter children-two man's

etso-yu n-chamcheo ora-i tsangti-longpen tai
food-drink not-remembering jungle-in nuts-berries only

hlo-tso-hlo-yuta vancho. Ole nchokacho
picking-eating-picking-drinking were. Then one day

opo-na otsi hansi 'wo "Oyi, otsi tsota" to
(their) father rice bringing going "Come, rice eat" thus

ezoa tsale, nungri-t-oni-na "A-po, eyo
saying when he called, (the) children-two "My-father, we

nhungo kyon etso-yu n-chamche-kama
now man's food-drink not-remembering-having become

yakso kâmayiala" to ezoa "Wuwu" to
monkeys are turning into" thus having said "Wuwu" thus

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khua yakso kamayicho. Chisilocho opo-na "Toka
crying monkeys turned into. Thereupon (their) father "Then
ni-ni-na yakso kamayina oyan mung-thang
you-two monkeys having turned into village sabbath-time
mangri eli chepya 'yam-li penchümüchü shotsoshoiya
keeping is seeing village-fields seeds of all kinds scratching up
yitake" to ezoa yitokcho. Hochi-na
you shall come" thus saying allowed to come. This because of
nhungaliya yakso-na oyan mung-thang mangri eli chepya
to this day monkeys village sabbath-time keeping is seeing
'yam-li penchümuchü shotsoshoiyala to
village-fields seeds of various kinds scratch up thus
rutala
(men) tell.

A man and his wife had two children, a boy and a girl. The wife died and when she was dead the husband took a new wife The new wife took no pity on the children of the dead wife, but used them cruelly. One day she said to the children "Go down and watch in the fields. I will send food to you every day. Do not come home." With these words she sent them off. But instead of food she sent them down only rat dung and chicken dung and husks tied up in leaves. Then the children opened the leaves and saw that she had only sent them down rat dung and chicken dung and husks instead of food. So the children forgetting all about human food went and picked nuts and berries in the jungle. One day their father brought down proper food and called to the children saying "Come, eat food," but the children answered "No father, we have forgotten all about human food now and are turning into monkeys." Then with a cry of "wu wu" they did turn into monkeys. Then their father said "You have turned into monkeys and when you see that the village is keeping an *emung*[1] day you will go and scratch up seeds and roots in the village fields" With these words he went away. That is why, men say, to this day when they see that the village is keeping *emung* the monkeys scratch up roots and seeds in the village fields.

23. HOW WOMEN WERE TURNED INTO GIBBONS.

Nkolo Kimongthang-na[2] mbo echantyoi-chiang
Once upon a time Kimongthang his wife's relations-the

[1] A day of purification when no work may be done.

[2] One version of this story states definitely that Kimôngthang was of the Othui clan and that formerly men of that clan were forbidden to eat gibbon.

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tsarhuiki soko yutoksi ezocho, "A-na
summoning rice beer having given to drink said, "I
ozü khio chentong tani vachoka.
sacrificial post to take *chentong* tree having cut have left.
Owo lomo ntsanga tia ti-lhungtokna süsi yita," to
Go leaf one even not-letting fall dragging come," thus
ezocho. Ole oten-na owo sütale otong chi tanyami
said. Then they going when dragging tree-the half dry
vacho kama oten-na sü-na lomo-chi vucho vucho.
was left because they dragging-by leaves-the falling falling
to tssocho. Tole oten-na lomo-chi n-vuchotoko
indeed were. Then they leaves-the not-to let fall
kilato lomo-chiang topu khero-lo shenkakhani vasi
intending leaves-the all twigs-on tying having fixed
sütacho. Toala lomo-chiang topu vukhanisicho. Chisilocho
dragged. Yet leaves-the all fell off. Then
oten-na Kimongthang yikra oyan-i n-yina ora-i-na
they Kimongthang shame village-to not-coming jungle-in-at
epue-chiango lishung kamkhani "Kyon, kyon" to khua
men-the mynas having become "Man, man" thus crying
yiracho. Osi eloe-chiango soko ruo oham
went. But women-the rice beer for making flour
chentokle hochi-na oten 'ton-o esekhansi
having ground this-with their forehead-on having smeared
"Woka, woka" to khuta khuso kamayicho.
"Going, going" thus calling gibbons became.

Once upon a time a man called Kimongthang called his wife's relations together and gave them rice beer to drink and said to them, "I have cut a '*chentong*' tree ready for a sacrificial post. Go and drag it in for me, but do not let a single leaf fall to the ground." So they went and began to drag the tree, but the leaves were half withered and they kept letting them fall. Then they, determined not to let the leaves fall, tied them onto the twigs and set to work to drag the tree again. In spite of this all the leaves fell off. Then they were ashamed to go back to the village and meet Kimongthang. So they fled away into the jungle, and the men became mynas and called "Kyon, kyon." But the women smeared on their foreheads the rice flour they had ground up for rice beer and called out "Woka, woka" and became gibbons. That is why the gibbon now has a white forehead.

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24. THE BARKING DEER AND THE TIGER.

Nchoka seno to na mharr to
One day (a) barking deer indeed and (a) tiger indeed
olan-i-na oni ntoktacho. Mharr-chi-na
path-on-from they two met. Tiger-the
seno-chi "A-kam, eni ha ocho
(to) barking deer-the "My-friend, we two indeed whose
'ho erowo sana leshüwo-shi etsetakalo"
teeth sharp are tuft of thatching grass-this let us nip off"
to ezole seno-chi-na "A-kam, toka
thus when said barking deer-the "My-friend, then
leshüwo-shi etseta" to ezoa oni
tuft of thatching grass-this nip off" thus having said they two
etsetacho. Ole seno-chicho echongana etse-thang,
nipped off. Then barking deer-the clean nipping off-while,
osi mharr-chicho etse-na n-tse-thang
but tiger-the nipping off-by not-nipping off-while
etse-na n-tse-thang to tai tssocho.
nipping off-by not-nipping off-while thus only became.
Chisicho mhar-chi-na seno-chi elam to
Then tiger-the (of) barking deer-the much indeed
khyua vancho. Tole seno-chi-na tarati tssoa
frightened was. Then barking deer-the a little later being
mharr-chi "A-kam osi a-ho-cho heto ero liya
(to) tiger-the "My-friend yet my-tooth-the so sharp being
heto kaloka, he" to ezoa
so is loose, look" thus having having spoken
lokpia echucho. Chitosicho mharr-chi-na
having felt (his tooth) showed. Therefore tiger-the
seno-chi n-khyuo rhamcho. Ovung-thang
barking deer-the not-fearing seized. Former-time
seno-na tyusora-chi-na nhungacha mharr-na
barking deer foolish speaking-that-from till now tigers
seno rhamala, to kyon-na rutala. Osi nkolo
barking deer seize, thus men tell. But formerly
seno-na tyua chito otsotso nhungaliya seno
deer saying so really till now barking deer
langtai oho-chi zena ero ha ero na kalok
if kill teeth-the certainly sharp both sharp and loose
ha kaloka.
also loose.

One day a barking deer and a tiger met on a path. Said

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the tiger to the deer "Let us nip off blades of tall grass, my friend, and see which of us has the sharpest teeth." The deer agreed and they both began to bite blades of grass, and the deer nipped the blades clean off, but the tiger, try as he would, could not bite them through. This caused the tiger greatly to fear the deer. But a little later the deer said to the tiger "Even if my teeth be sharp they are loose. Look," and as he said this he gripped his long upper teeth in his fingers and showed how they moved. At this the tiger no longer feared the deer and devoured it. It is said that it is because of these foolish words spoken by the deer so long ago that tigers eat deer to this day. If you kill a deer and look you will see that what it said long ago is true nowadays. Its teeth are certainly sharp, but they are loose.

25. THE WILD BOAR AND THE TIGER.

Nipong to na mharr to oni okamo
Wild boar indeed and tiger indeed they two friends
tssotacho. Oni nchokacho ora-i-na ntoktaiki
became. They two one day jungle-in-at having met
nipong-chi-na mharr-chi "A-kam, e-ni ha ocho-na
wild boar-the (to) tiger-the "My-friend, we-two both which
ocho tou na ocho-na ocho khyu to tssosana
which defeat and which which fear indeed will become
eyataka; nno nto hamla"? to engale
let us fight; you what will take"? thus when asked
mharr-chi-na "A-kam, aiyo otsak-o orr phakhai
tiger-the "My-friend, I body-on cane having bound
ham" to nipong-chi ezocho. Tole nipong-chicho
will take" thus (to) wild boar-the said. Then wild boar-the
"A-kam, aiyo etyunchon epfui ham" to
"My-friend, I clay having smeared will take" thus
mharr-chi ezocho. Hetosi "Nchok tirok-o eyataka"
(to) tiger-the said. After that "Days six-in will fight"
to oni tyutacho. Chitosicho nipong-cho nchok tirok-chi
thus they two said. After that wild boar-the days six-the
etyunchon tai epfusila tyingtok tyingtok to epfumung
clay only smearing letting dry letting dry thus smearing
na mharr-chicho nchok tirok-chi orr tai tam-tami phakha
and tiger-the days six-the cane only cut-cutting binding
to tssocho. Nchok tirok-chi pentakale oni eyatacho.
thus became. Days six-the when full they two fought.
Tole mharr-chicho nipong-chi owo nkak-na etyunchon-chi
Then tiger-the wild boar-the going biting-by clay-the

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tai ewo aku opang etyeng-tyeng nkakcho, na
only attacking each mouth full-full bit, and
nipong-chicho mharr-chi owo nkak-na ewo aku
wild boar-the tiger-the going biting-by attacking each
orr-chi ntsang-ntsang-na nkakchia vanvansi
cane-the one-one-by having bitten through being
orr-chi nkakchikhani mharr-chi rhamsi yile,
cane-the having bitten off tiger-the having seized when going,
ticho-na hiyacho. Tole nipong-chi-na
(a) thin bamboo stuck into. Then wild boar-the
" Mharrsamona rhamtak-na nte heto-na a-hiyata
" A great tiger even seizing-after you thus-by me-stick into
to" to tyua nkakle ticho-chi-na nli-chi
indeed" thus having said when biting bamboo-the tongue-the
nyakchaki, nipong-chi ha chilo-na tchhicho. Hochi
having cut off, wild boar-the also there-at died. This
mharr thampo-na hungi tsosi chi-tssoko-na
tiger another having seen having eaten this-being-from
nhungacha mharr-na nipong rhamala. Tokatola
till now tigers wild boars seize. Yet
ovung-thang mharr-na nipong n-tou-chi-na
first-time tiger wild boar not-defeating-the-from
nhungaliya choro eni-tham n-kampiocho mharr-na nipong
till now months two-three not-waiting tiger wild boar
n-rham to tyutala.
not-seizes thus (men) say.

The wild boar and the tiger were sworn friends. One day when they met in the jungle the wild boar said to the tiger, "My friend, let us two fight and see which will get the better of the other and which will fear the other. What will you take to protect yourself?" Then the tiger said to the boar, "I will take cane and wind it round my body," but the boar said, "I shall smear clay all over myself." They arranged that the fight should take place six days later. Then the boar for six days did nothing but smear clay over himself, letting it dry after each coating, and the tiger did nothing but cut lengths of cane and wind them round his body. Then when the six days were up they fell to and fought. Now whenever the tiger flew at the wild boar and bit him, all he got was a mouthful of clay, but the boar, whenever he attacked and bit the tiger, bit through a piece of cane, till he had bitten them all through one by one and killed the tiger. But when the boar was going away after his victory a thin piece of bamboo ran into him. Then he said, "I have killed the tiger. What is this doing running into me?" and

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seized it in his mouth. But the thin bamboo cut his tongue off so that he died on the spot. Then another tiger came along and saw the body and ate it. That is why nowadays tigers eat wild boars. Yet it is said that because the tiger could not beat the wild boar at first, a tiger cannot catch one unless he bides his time and stalks it for two or three months.

26. THE SUN AND THE MOON.

Ovung-thang-cho nhunga eng-shicho choro na nhunga
(At) first-time-the now sun-the moon and now
choro-shicho eng tssocho. Tole nhunga choro-shi-na eng
moon-the sun was. Then now moon-the sun
tssoa-thang-cho eng elam to woncho. Elong-i
being-time-the sun much indeed shone. Heavy jungle-in
otsang-otong lomo-losü pato laplap tchhikhancho, na
trees-trees leaves-leaves too all died, and
kyon ha ezaptoka phitsangkhancho. Chisicho nhunga
men too causing to suffer burnt up. Then now
eng-shi-na choro-shi tsaiki ezocho "Nno nto-tsso-na
sun-the (to) moon-the calling said "You what-being-from
eng hetata woniki elong-i otsang-otong lomo-losü
sun so much shining heavy jungle-in trees-trees leaves-leaves
mpato tchhitok, na kyon ha heto ezaptoka
too making to die, and men too so much causing to suffer
phitsangala?" to ezocho. Osi nhunga eng-shi
burn?" thus said. But now sun-the
choro-shi "Nna eng tssocho-cho kyon-tsoi laplap
(to) moon-the "You sun being-the human-race all
phitsangkham na limha-shi ha monsakama
burning up and world-the also because you are destroying
nching-thang-na eng i-n-tssotokla," to ezoa
to-day-time-from sun you-not-cause to be," thus having said
mangsü 'chu-ki choro-shi 'mha-lo etyakaisi eng
cow dung-with moon-the face-on having smeared sun
n-tssotoko, nhunga eng-shi-na eng tssocho. Hochi
not-made to be, now sun-the sun became. This
tssoko-na nhunga choro-lo nyika mbao-shi nkolo
being-from now moon-on black (mark) being-the formerly
eng-shi-na mangsü 'chü-ki omha-lo etyakaio-chi to
sun-the cow dung-with face-on smeared-the thus
kyon-na rutala.
men tell.

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At the beginning of time what is now the sun was the moon, and what is now the moon was the sun. In those days when what is now the moon was the sun it was very hot, so that all the leaves and the trees in the jungle shrivelled up and died, and men suffered torments from the heat. Then what is now the sun said to the moon (which was the sun in those days), "Why do you shine so fiercely that you make all the leaves and trees in the jungle shrivel up and die, and cause men to suffer torments from the heat? You by being the sun are making men and leaves to die from heat and the world will be destroyed. Therefore from to-day I will not let you be the sun." With these words he smeared the face of what is now the moon with cow-dung, and what is now the sun become the sun. Therefore men say that the dark marks on the moon are where the sun smeared cow-dung on its face.

27. THE OLD MAN WHO KEPT WILD DOGS.

Nkolo mangtham n-ro-thang kyon nchyua
Once upon a time darkness not-come-time man a
vancho. Mbo-na ranfu ekamrucho. Mbo-na ranfu-chiang
was. He wild dogs kept. He wild dogs-the
sopya oso elam to langtai tsocho. Ole chisicho mbo
taking meat much indeed killing ate. Then later he
sontsangi ora-i ote m-pampikokosicho.
having grown old jungle-in them not-could accompany.
Hochi-na mbo-na mbo ranfu-chiang topu
This-because of he (to) his dogs-the all
tsarhui mbo nthango oki-(i) vantokcho. Eson-
having called him near home (at) caused to be. Old
china otsak aku echi epyototsü nnungi vasi
man-the food each share boiled rice having cooked having kept
mbo-na chitayawocho. Osi okhawo-chi epyototsü-chi-na
he divided up. But youngest-the boiled rice-the-with
n-chancho. Chi-thang eson-chi-na ezocho "A-ranfu-
not-reached. That-time old man-the said "My-wild dogs-
ten, aiyo asontsangtaka nhungo nte m-pampikok.
pack, I having grown old now you not-can accompany.
Olia n-chamchetake a-na koto nte nzan na kote
Yet not-do forget I how much you loved and how much
ekamchosana. Osi nte-na kothang oso rhamana chi aku
looked after. But you when meat catch that each
ocho ntsang-ntsang lanrhu-lo a-vaitake." Chi-thang
leg one-one cross roads-on for me-leave." That-time

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ranfu-chiang-na yiraisicho. Tole eson-chi-na · nto ezochosana
wild dogs-the departed. Then old man-the what said
n-nchamcheosicho. Osi okhawo-chicho omotzü-thangi
not-remembered. But youngest-the grandfather-with
lamm n-tsso vancho. Nto tssole, omotzü-na
heart not-being was. What being, (his) grandfather
epyototsü mbo m-piochi-na. Osi ranfu-thampo-chiang-
boiled ricé him not-giving-because. But wild dogs-other-the
na okhawo-chi engacho, "Eson-chi-na ntoko to
youngest-the asked, "Old man-the what indeed
ezochola?" Mbo-na ezocho "Eson-chi-na ete ezocho
said?" He . said "Old man-the thus said
"Nte-na kothang oso rhamana chi aku ochü lanrhu-lo
"You when meat catch that each dung cross roads-on
a-vaitake." " Hochi-tssoko-na nhungacha ranfu-na lanrhu-
me-leave." " This-being-from till now wild dogs cross roads-
lo tyoala.
on leave their droppings.

Long, long ago, before the Great Darkness[1] came, there lived a man who kept wild dogs, as men now call them. With his dogs he killed and ate many deer. But at last he got so old that he could no longer go into the jungle with his dogs. So he called them all to him and brought them to his house. There he cooked enough rice for each to have a share, but when he divided it up it did not go round properly and the youngest dog got none. Then the old man said, "My dogs, I am very old and can no longer go out hunting with you. But do not forget how I looked after you and cared for you. When · you kill a deer, always leave a leg (*ocho*) for me at the cross-roads." When the dogs had gone away they quite forgot what the old man had said to them. Now the youngest dog was angry with the old man because he had given him no rice. So when the other dogs asked him what the old man had said he replied, "The old man said, 'Whenever you kill a deer, leave dung (*ochü*) for me at the cross-roads'." That is why to this day wild dogs leave their droppings at the cross-roads.

28. THE GREEN PIGEON AND THE SQUIRREL.

Worowoni	zi-cherha	n-tyunta-thang
Kinds of birds	rats-squirrels	not-separate-time

[1] It was after the Great Darkness that men and animals became so different that they could no longer talk together.

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akau-na mbo 'ro-chi cherha-thangi khosokhot
(the) green pigeon his chicks-the squirrel-to nuts
etham man yencho. Akau-na cherha-chi
three price sold. The green pigeon (to) squirrel-the
"Khosokhoti etham a-pisi a-ro-chi khia" to ezocho.
"Nuts three me-giving my-chicks-the take" thus said.

Tole cherha-chi-na khosokhoti ntap ntsanga na
Then squirrel-the nuts without kernel one and
ntsa eni to pisi mbo 'ro-chi khicho.
with kernel two indeed having given his chicks-the took.

Ole akau-na cherha-chi-na khosokhoti ntap
Then the green pigeon squirrel-the nuts without kernel
ntsnaga na ntsa eni to mbo pi-ochi hanai
one and with kernel two indeed him gave-the bringing
tarapi zele ntap ntsanga na ntsa
breaking when saw without kernel one and with kernel
eni to sakama cherha-chi-thangi ekhilanta-lo wocho.
two indeed was squirrel-the-to take back-to went.

Mbo-na owo cherha-chi "I-khosokhoti khia osi
He going (to) squirrel-the "Your-nuts take but
a-ro-chi a-pia" to ezocho. Chi-thang cherha-chi-na
my-chicks-the me-give" thus said. That-time squirrel-the
akau-ro-chi ethu tyem-tyem zana ria
(of) green pigeon-chicks-the fat fizz-fizz falling roasting
vansi "Toka i-ro-chi khialo" to ezoa mbo picho.
was "Then your-chicks-the take" thus saying him gave,

Ole akau-chi-na hochi zesi n-khilantao "O o
Then green pigeon-that this seeing not-taking back "Oh oh,
akau, akau, ou" to khua tya yicho. Hochi-tssoko-na
akau, akau, ou" thus crying calling went. This-being-from
nhungacha akau-na "O o akau, akau, ou" to
till now (the) green pigeon "Oh oh akau, akau, ou" thus
khuala.
cries.

In the days when birds and rats and squirrels could talk to one another the green pigeon sold her chick to the squirrel in exchange for three nuts. The green pigeon said to the squirrel "Give me three nuts and you can take this chick of mine." Then the squirrel took the chick, but gave the green pigeon two good nuts and one without a kernel. When the green pigeon took away the nuts and cracked them he found that two were good and one had no kernel, so he went to give them back to the squirrel, and said to him "Take back your nuts and give me my chick." The squirrel was then roasting the chick,

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and watching the fat drip hiss, hiss into the fire. And he said to the green pigeon "Here is your chick. Take it." and handed it to him. When the green pigeon saw what had happened to his chick he would not take it, but went away weeping and crying, "O, o, akau, akau ou" That is why the Green Pigeon still cries "O, o, akau, akau, ou."

29. THE WAGTAIL AND THE OWLET.

Erangi mangtham rocho silo worowoni
At the beginning darkness came after kinds of birds

n-tyunta-thang, nchoka woro topu santhrui tsangon
not-separate-time, one day birds all collecting day

to na zamo to lio tyutacho. Ole woro topu-na
indeed and night indeed being discussed. Then birds all

velongo-chi "N-na tyua" to ezoa tyutokle,
(to) owlet-the "You speak" thus speaking making to speak,

mbo-na "Tsangon toku mang tsangon toku won
he "Days nine darkness days nine light

to tssoka," to tyucho. Chisilocho woro
indeed shall become," thus he spoke. Thereupon birds

topu-na "Chi to mak, chi to mak" to
all "That indeed no, that indeed no" thus

tyuta hepi-hepi-na kurri-lo tyak-tyak mbo
speaking this side-that side-from head-on pat-pat him

tamicho. Chi-tssoko-na nhungacha velongo kurri
smacked. This-being-from till now owl's head

etyaka-la. Osi woro topu-na "Nhungo ocho-na tyula,"
flat-is. But birds all "Now that one let speak,"

to tyutacho. Chi-thang sese-hambong-ro-chi-na "Toka
thus said. That-time wagtail-cock-little-the "Then

a-na tyuka; engata" to tyua "Mang-won-chi,
I will speak; listen" thus speaking "Darkness-light-the,

mang-won-chi to tssoka" to tyucho.
darkness-light-the indeed there shall be" thus spake.

Ole woro topu-na "Hochi to, hochi to"
Then birds all "That indeed, that indeed"

to tyuta hepi-hepi-na mbo nzampicho.
thus speaking this side-that side-from him stroked.

Nkolocho mbo hono hambong tara kama, woro
Formerly he fowl cock equal though being, birds

topu-na mbo nzampicho-na nhungacha heto teria-la.
all him stroked-because till now so small-is.

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Long, long ago, about the time that the Great Darkness came upon the earth, all the birds—for in those days the kinds were not as different as they are now—met in council to decide how night should follow day. With one voice they called on the owlet to give his opinion. Then the owlet said, "Let there be nine days' darkness and nine days' light." "No, no," said all the birds, and smacked him on this side of his head and on that. That is why nowadays the owlet has a flat head. Then all the birds said, "Who will speak now?" And the wagtail said, "Listen to me, then; I will speak. Let us make darkness and light alternately, day by day." "Yes, yes," said all the birds, and stroked the wagtail all over. He used to be as big as a village cock, but because all the birds stroked him so much he is now very small.

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A Study of some Bengali Customs.

By M. M. Chatterji.

I.

SURVIVALS OF GROUP-MARRIAGE.

The ensuing observations proceed upon the development of individualised rights and liabilities from their antecedent collective character. That collective rights were recognised in thought and action before the rights of individuals is in the writer's opinion beyond dispute. Property belonged to the tribe, sub-tribe or family before individual ownership was thought of. Liability was also collective before it was accepted as individual. Blood-feuds and vendettas may be cited as examples. The imposition of punitive police on an Indian village is not without significance. Marriage has evidently followed the same process of evolution. There seems to be no reasonable doubt that marriage in a collective form existed before its individualisation. But whether the marriage was of the men of one tribe with the women of another or limited within smaller groups or families it is immaterial for the present purpose to consider. Nor is it necessary to inquire whether the practice of the Ptolemys of brothers marrying sisters was a mere social perversion or a revival from the times when, according to Morgan, there existed consanguine families, "founded on the inter-marriage of brothers and sisters, own and collateral, in a group,[1]" more specially as the ensuing observations are confined to India and not intended to cover the human race.

Group marriage is comprehensibly described by Morgan in connection with what he calls "Punaluan Family" which, according to him, "was founded upon the inter-marriage of several sisters, own and collateral, with each others' husbands, in a group—the joint husbands not being necessarily kinsmen of each other; also, on the inter-marriage of several brothers, own and collateral, with each others' wives in a group—these wives not being necessarily of kin to each other, although often the case in both instances. In each case the group of men were conjointly married to the group of women.[1]" In short group

[1] Ency. Brit., 11th Edn. Family.

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marriage is combined polyandry and polygamy. The admission of non-kinsmen by blood, so far at least as India is concerned, is open to grave doubt. Thurston in his "Ethnographical Notes: in Southern India," Chapter I, clearly shows the existence of polyandry and polygamy among aboriginal tribes but not their co-existence. Under the former system the wife of one brother becomes the joint wife of all his brothers but they are all allowed to have separate wives of their own. Under the latter system the husband of one sister is the joint husband of all the sisters who may have separate husbands of their own. It would also appear, as will be presently seen, that the husband of a sister had some sort of claim on the favours of the wives of his wife's brothers. These primitive customs, even where they can be traced in the present day, are somewhat like worn out coins, with the effigy and inscription difficult of recognition. In one the effigy is effaced, the inscription being still imperfectly legible, while in another the effigy is traceable but the inscription hard to read. The obverse of the coin is discernible in the account given in the Mahābhārata, of the Pāndava brothers having one joint wife in Draupadi and the separate wives of Arjuna and Bhima. The reverse casts a shadow on the marriage of the Moon with the 27 sister asterisms. This undoubtedly is a poetical expression of observed astronomical facts. But the form of expression appears to have had its origin in facts of general experience in society.

Shastric light converges on the subject. It would be enough to cite Manu to show that the Shastric or Brahmanical people were, at the beginning of what may be called the Shastric period or prior thereto, a tribe numerically inconsiderable, dwelling in the country between the Sarasvati and the Drisadvati rivers. The former is lost in the Rajputana desert and the latter is often identified with the Kaggar. Anyway it was a small tract surrounded by hostile bands. The custom of raising issue from a wife sterile with her husband or a childless widow shows the absolute necessity of increase in the number of men able to speak to the enemy at the gate. This would be natural in a small community in the midst of unfriendly surroundings. It seems clear that the conditions contemplated are in consonance with endogamy and group or clan marriage. The Mahābhārata relates the institution of individual marriage by Sveta-ketu, son of Uddalaka at a latter stage of race development of the Brahmanical people, when probably they had commenced to spread along the course of the Ganges.[1]

[1] Adi. P.C. 122.

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It may be held without reasonable doubt that increase of population being of vital importance to a tribe strong measures would be necessary to keep all their womankind within the community and prevent their sterility. Consequently the preservation of strict endogamy by collective marriage was a matter of a life and death struggle. And at the same time the capture of a woman would be highly prized in the captor's community. With the growth of stable forms of government, with law in the place of tribal customs, a more peaceful matrimonial usage would be evolved. It was then time to think of strangeness and unfamiliarity as elements of sexual attraction and of racial improvement. Thus would exogamy, now surviving in prohibited degrees of marriage, come to be formulated and observed. These degrees are not uniform among men. For instance, it is lawful for a Madras Brahman to marry his maternal uncle's daughter or his sister's, a practice which will be condemned as hateful incest in Northern India. The only general rule is that marriage between those who are likely to be, even if they are not actually, brought up together, as boys and girls, is condemned.

In high caste Bengal very high flavoured flirtation prevails, by custom, between the husband and the sisters of his wife as also with the wives of her brothers. The latter it would appear were included in the group of wives in the remote past. Similarly, between a wife and the brothers of her husband with the restriction immediately to be noticed. The wife of a younger brother is invisible, inaudible and intangible to his elder brothers as also to other superior relations such as the father-in-law. This custom is evidently an after-growth based on the desire to avoid even the appearance of evil on the part of those in authority as senior members of a joint family, subject to the rule of infant marriage. What is true of brothers and sisters in regard to the custom under notice is equally true of collaterals of the same degree of relationship with the common ancestor. The survival of group marriage in the customs described receives further demonstration from that relating to the naming of relationships. The elder brothers of the father are called "elder-fathers" (in Sanskrit *Jyestha tāta*, in Bengali *Jetā*) and his younger brothers "younger-fathers" (in Sanskrit *Khulla tāta*, in Bengali *Khuḍa*). This custom is also prevalent among the older communities in some parts of the Madras Presidency. *Sālā* or wife's brother is a most offensive term of abuse in Bengal, the corresponding term in Hindustan proper being *Sasurā* or father-in-law. In both cases the sting lies in the collective character of the women, dishonoured by the quoted terms of abuse.

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II.

MOCK MARRIAGE.

Among hereditary Hindu prostitutes in Calcutta, as in the case of Deva dasis in other parts of India, there are forms of marriage, which observed, the practice of the profession is considered sinless both for the practitioner and her patrons. Accounts of such marriages cannot be collected without difficulty.

In one form of such marriage the bridegroom is a degraded or pretended Brahman who goes through the form of marriage observed among the higher castes, for the usual fee of Rs. 5 and the nether garment, called *dhuti*, and the upper one called *chādar*. No sewn garment can be used in marriage or any other ceremony regarded as sacred. It is considered offensive to the hoary antiquity of the costume. He never sees his bride after the ceremony is concluded and departs with silent, if not express, consent to his bride's subsequent career of sin and shame in the world's eye. If he ever again visits his bride's mother, natural or adoptive, his welcome is limited to a plate of sweetmeats. One such bridegroom once declared himself a Mukarji Brahman, gave the *gotra*[1] of the Mukarji's correctly but was ignorant of the *pravara*.[2]

A girl is initiated into the profession by marriage with a god. In the case of an idol, already established for public worship, the ceremony is quite simple. It consists in the officiating priest's placing vermillion powder on the parting of the girl's hair just above the forehead from a receptacle previously placed on the idol's foot. A fee is paid to the priest for the service. If the idol be a private one the regular ceremony is performed, the priest uttering on the idol's behalf the *mantras* or formulæ prescribed by the Shastric ritual on the part of the bridegroom. In this latter form upon accidental destruction of the idol the surviving wife has to abandon all marks of wifehood, the vermillion is rubbed out and the left wrist bared of the iron wristlet. In all other respects her life continues its even course. In the other form where the idol is public the risk of widowhood is removed.

In another form the bridegroom is represented by a long-lived flowering shrub, preferably tube rose (Rajanigandhā, botanically *Polienthus tube-rosa*) or Bhuin chāmpā (*Kaempferia rotunda*). The ceremony in all other respects is the same as in the case of a private idol. The preservation of the shrub's life is a matter of anxious care. The marks of wifehood are believed to be auspicious as attractive to male visitors. This form is

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[1] *Gotra*—a Brahmanical sept having a well-known sage as common ancestor from whom the sept derives its name.

[2] *Pravara*—Vedic sages belonging to a gotra.

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sometimes varied by the substitution of a sword or dagger as the bridegroom. These objects are durable and useful guards against risks of widowhood.

Instances are not rare where some rich reprobate selects an immature girl to be the future companion of his pleasure. In support of his claim he makes a monthly allowance for her, called *jalpāni* or refreshment allowance. When the girl attains nubile age marriage is celebrated in one of the forms described. At its conclusion he takes the place of a normal bridegroom in the bridal chamber where the ceremony known as *phul sajjā* or the bed of flowers is performed.

The ceremonies described are evidently intended to preserve the religious purity of the whole sphere of prostitution. The consent of the human or the silence of the inanimate husband justifies the action of the prostitute and her patrons. The husband-god dwells in every male heart as its ruler. Marriage with him is marriage with every man. Thus prostitution is taken as a bringer of sanctification and not sin into the world. Earth, scooped out of a brothel, has its use in some forms of religion, the prostitute being apparently regarded as a social protective against male propensity for evil.

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A Further Study of Bengali Customs.

INITIATION INTO WIFEHOOD.

By M. M. Chatterji.

Every existing custom, however perplexing in its meaninglessness, must be taken to be expressive, in its origin, of some significant purpose. The persistence of the custom is proof of its emotional or magical value to its observer, who, very often is unable to trace the underlying reason. No conscious act, and more especially a series of them, moving to a single end, can be conceived, even in the case of a lunatic, to be wholly devoid of meaning and purpose. Inconsistency, singularity and obvious but unintentional hurtfulness to others or the agent himself may be indicative of insanity but not of purposelessness of conscious action. Considerations of this character impell exploration of the original purpose of existent customs, however meaningless in appearance.

The treatment from this view-point of the non-shastric customs, prevalent among high caste Bengalis in connection with the initiation of a married child into the realities of wifehood is not free from special difficulty. The customary observances are a sealed book to male eye and ear. The particulars can only be gleaned by persistent cross-examination of several witnesses and even then by bits to be put together, and the accuracy of the whole to be tested by the creation of suitable opportunities. Again the work of description has to be accomplished in the penumbra of propriety, requiring constant watchfulness to guard against slipping into the umbra of conventional condemnation. The subject must, therefore, be introduced with the invitation to anticipate occasions when all that is meant will not meet the ear.

On the first appearance in a girl-wife of what Sir Almroth Wright calls the "monthly sickness" in a woman she is segregated and not allowed to see the sun or a male person. Whenever occasion arises for her to move out of her cell the *sāri* cloth has to be drawn from her head to her chin, veiling the face completely. Her cell is known as the *tir-ghar*, literally arrow-room. The cell is formed by barricading the corner of a room by two lines, at right angles to each other, of bamboo branches stuck on mud pedestals. The bamboo sticks are split at the top so as to hold two pieces of dried palm leaves in the form of a cross. These sticks are taken as arrows and are joined together by lines of thread. The only

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furniture inside is a piece of fine mat or *mādur*, old and out of use.

At the outset is organized a board of five married women for the performance of the ceremony which is not concluded in a day. The preparation of the "arrow-room" is their first work. The head of the board is a mother of whom no child is dead. In the absence of such a one the place is taken by one whose first born child is alive. They prepare jar-fuls of liquid, composed of lime and turmeric paste for which any other liquid may be substituted of which the colour is pallid red. The reality symbolized by it is obvious. Besprinkling one another with this liquid they collect broken rice, by preference, from five households with their blessings, in a fresh earthen pot. The collection, boiled into a hasty pudding, is eaten with molasses, milk or tamarind according to taste and forms the chief diet of the wifely neophyte. But before tasting food she has to take a bath, rubbed over with turmeric paste. Besides the hasty pudding described the only food allowed is a selection of uncooked vegetables and milk and its preparations. The use of salt, in any form, is to be religiously avoided. This regulation of diet is, in competent medical opinion, founded on sound hygienic principles. It is calculated to prevent excitement in any form and to soothe the irritability, incidental to the "monthly sickness."

After the bath and before the meal the girl-wife has to sit on the mat in the cell when a largish pebble, washed, annointed and smeared with turmeric, is placed on her lap with an abundance of pointed jokes and piercing ejaculations. The pebble is represented as her child and allusions are made to the history of its origin in her body. Good wishes are also expressed that her lap may never be empty of a child, that is, her progeny may be numerous and born in quick succession.

Her food is placed on a plantain leaf with the mid-rib entire. The leaf again is spread on a bed composed of leaves of egg-fruit or *brinjal* and earth, collected from a rat-hole. The latter, probably, is intended to impress upon her the necessity of industry and perseverance for a happy married and family life and the former as emblem of life as a whole. The thorny leaves and stalk of an egg-fruit and its bitter taste when immature are symbolic of life's early struggles. It ripens into the tasty, wholesome fruit which finally turns to seed and is un-eatable.

The meal finished, the soiled plantain-leaf is placed in a pot which also holds the washings of her mouth and hands. This observance is continued for four days. When the fifth day dawns all such pots are thrown away and the *ákátá pukur* or unexcavated tank, described in connection with ante-nuptial customs, is prepared. To keep up the illusion of a tank clams are spread under the water, poured on the tank. The heroine

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of the occasion and her companions disport themselves in it and pelt and daub one another with mud while the heroine picks up the clams. In Calcutta, when the construction of an artificial tank is impracticable, the Municipal water-pipe, emitting the first flow, is substituted but clam picking is not given up even then.

A real bath is then given to the heroine. But it begins with the bath, technically called *Sahasra-jhārā-snān*, literally "the bath in thousand streams." A potful of water taken from the "unexcavated tank" is poured on her head through a seive. This is probably a survival from the times when she had to bathe in the confluence of several streams, in memory of which a conch-shell and the entire shell of a tortoise are placed near her feet. Then follows the real bath. For this is used water in which are placed "five jewels" (*pancharatna*), namely, diamond, pearl, ruby, gold and coral, each of which has several substitutes. After the bath she is dressed in a new *sāri* and a fresh emblem of those to be born of her is placed on her lap. It consists of a green cocoanut with stalk on, a pomegranate and other kinds of fruit, treated as presently to be seen. These are placed in a concave, handleless earthen vessel, known as *sarā* and covered with another but so as to leave the cocoanut stalk exposed to the very end. This receptacle is tied up with a piece of cloth, yellowed by soaking in turmeric water and again reddened by daubing with the red fluid pressed out of cotton discs, called when finished, *ālta* in Bengali and used as preservative of a preparation of shellac. The covering cloth is strung together by red thread and the whole streaked and spotted red with vermillion. The pebble, which is replaced by this on the heroine's lap, is fondled and caressed as though a living baby. Its generation is typified by the many seeded pomegranate representing the male and the green cocoanut, with liquid concealed within, the female generative principle. The stalk connects it with the bodily organism, symbolised as the tree, connected with the fruit by the stalk. A mock contention as to the paternity of the child follows: "Whose was the soil and whose the seed?" The receptacle of the fruits mentioned, symbolising the child, is preserved for a time not exceeding a year, and whenever practicable is thrown into a bamboo tope. *Vansa*, the Sanskrit name for the self-multiplying bamboo, means descendants as well. The significance of the practice is quite apparent.

After the bath follows a theatrical representation of domestic and social life. The head of the board of married women represents the king with another member as queen, while others, including non-members who may be, and often are, widows, represent merchants, traders and servants of various degrees. A barber wife is called in to pair nails and paint red the sides of the married women's feet. The home-

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coming of the absent husband, the king, is then put upon the mimic stage. The queen turns her back on the king while serving him with food with the left hand. She stands astride over the dishes when she places them before him. The wife must not forget her duties even in a pet of love, giving rise to the expression of pretended contempt. A screen is then put up, evidently with the object of shutting out undesirable memories from widows, husbandless for life, and the girl-wife is shown by the stage king and queen, as far as possible, what conjugal intimacy will require of her. Hired women of pleasure are brought in for her education in *ars erotica* by suggestive dances and songs. This exhibition is popularly called *nit kit*, obviously a corruption of *nritya gita*, meaning, appropriately in this connection, dance and song. All outward symptoms, accompanying gestation and parturition, are mimicked. The umbilical cord of the pebble child is cut and it goes through all the post-natal ceremonies until the astrologer comes in to find for it a name which will secure its prosperity in life. Thus is she prepared for married life.

The actresses after bath sit down to a rich repast from which the heroine is excluded. She must for the day live upon a strictly vegetarian diet, of no gorgeous kind.

The conclusion must be expressive of the fear that the Freemasonry of women has preserved many secrets from the ears of a mere man. It has also to be added that *shastric* rites are intended to teach the husband his marital and procreative duties, the accent being laid on the latter. But how far the Sanskrit formulas reach the desired end must be left undetermined.

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Some Marriage Customs in Bengal.

By M. M. Chatterji.

Among high caste Bengali Hindus there are some marriage customs—not religious rites—which form an interesting study for the ethnologist. They are indicative of a stage of racial evolution of which the origin is lost in remote antiquity. In the main they are survivals from the time when the only form of marriage was that by capture. These customs may be classified with reference to religious rites as ante-nuptial and post-nuptial. The ante-nuptial customs come first in the order of treatment.

Some days before that appointed for the celebration of the marriage, a ceremony is performed called *gātra haridrā* or the rubbing of the body with turmeric paste. Thus besmeared the bride and bridegroom, in their respective homes, go to bathe in what is called *Ākātāpukur*, literally, the unexcavated tank. It is no tank in reality but a low, square-shaped, mud platform, erected for the occasion, with a banana tree planted at each corner. The bath consists in the pouring of water on the head of the bather who stands in the middle of the mud platform. This custom is obviously a survival from the days when marriage by capture was a reality and not a mere form. The most favourable opportunity for the capture of a girl was when she was bathing in a river or a natural sheet of water, without male protectors. The significance of the turmeric paste will be considered later. In forgetfulness of its origin, the bathing ceremony, in modern times, is observed by the bride and bridegroom alike for the satisfaction of the feeling of reciprocity between them. To several other customs, to be presently mentioned, the same explanation is applicable.

In these degenerate days the bridegroom afterwards carries, as his constant companion, a pair of nut-crackers instead of a shining sword as mentioned by the poet Kalidas, and the bride in response carries a *Kājal-latā*, the harmless little instrument for the manufacture of collyrium for her eyes. The poet fancies (Kumar Sambhavam, Canto VII, Verse 36) Siva looking at the reflection of his face on his sword, when setting out to wed Uma. The commentator says such was the practice of heroes. Naturally when the bride could only be won by a fight with her kinsmen the lustre of the sword was undoubtedly an object of anxious attention. This practice now survives in the bridegroom's carrying a miniature mirror along with the nut-crackers. In some places the mirror is placed in the bride's hand.

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As a rule, marriages are celebrated at night in the bride's home, at the entrance to which the bridegroom's party have to make presents known as *grāmbheti* or presents to villagers, originally to overcome their opposition. A mock fight takes place between the musicians on both sides and the bridegroom is pelted with rice rolled into balls with molasses, instead of old shoes as elsewhere, to secure good luck to the newly married couple.

After the bride has been given away and taken as wife, according to religious rites, prescribed by sacred law, there follow certain ceremonies known as *Stri-āchār* or Woman's Custom, consisting of sympathetic magical movements and transformed features of marriage by capture.

It would appear that when there was actual capture, the captive was tied to a convenient tree and surrounded by the captor's kinsmen to prevent her rescue by her own kinsmen in pursuit. In Bengali marriages, the tying is still in practice but it is the bridegroom and not the bride who is tied. The spot where this ceremony is observed is called *Chhāndnātalā* or "beneath the tree of tying." The term tree is applied even to a marble hall, without any tree in sight. The substitution of the bridegroom for the bride in this ceremony is obviously due to the prevalence of feminine autocracy in the observance of "Woman's Custom." It has also a magical significance and is believed to be efficacious in rendering the bridegroom a happy slave in marriage. Statistics are not available to test the potency of this magical rite.

On marriage and during wifehood a woman has to apply vermillion powder on the parting of her hair just above the forehead and to wear an iron wristlet on her left wrist to warn off all intending captors, who are thus informed of her captivity and that blood has already been shed for her.

The bridegroom cannot take the bride home by the way he came. A different route must be followed, reminiscent of the necessity of avoiding pursuit when marriage by capture was a reality. When she is brought home the bride may not cross the threshold herself. She has to be carried over it by the mother-in-law or some other related elderly woman to keep up the illusion of capture.

What follows is intended to reconcile the captive to her new conditions of life. *Dūrvā* grass (*panicum dactylon*) (which grows only on high ground) and paddy are placed on her head. *Dūrvā* grass, by the ramification of its roots, symbolises progeny and paddy symbolises wealth. She has to dip her feet in milk, coloured red by a preparation of shellac and to pass by a pot of milk, boiling to overflow. She is given three things—a pot full of paddy on her head, a jar of water on her hip and a live fish on her lap. All this is intended to assure the captive that she is wedded to plenty and not to want.

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The foregoing observations make it clear that the marriage in question is really in double form. It is once performed according to rites laid down by Shastric authority and again according to aboriginal form. That the form of marriage by capture is the only form prevalent among most of the aboriginal races of India is witnessed by Dalton, Thurston, and other writers on Indian ethnography. With many such races the pasted turmeric is used by women in preparation for their daily bath. In "Bhagavat Purāṇam" this habit is mentioned as the distinctive characteristic of an aboriginal woman married by a renegade Brahman. The expression "Woman's Custom" is significant. Its observance is necessary to satisfy the conscience of the bride. The double form of marriage must have originated in the general prevalence of marriages between Shastric or Brahmanical people with scriptureless aboriginal races. It also shows the presence of hypergamy, known to the sacred law of the Brahmans, which permitted men and prohibited women from marrying beneath them.

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Some Megalithic Work in the Jaintia Hills.

By J. H. Hutton.

In October, 1925 I visited the Jaintia Hills (in Assam) with the object of seeing some of the megalithic work left by the Synteng dynasty of Nartiang in the Jaintia Hills and Jaintiapur in the plains of Sylhet at their foot.

There seem to have been two branches of this family, Nartiang having been the original capital and Jaintiapur that of a cadet branch, though the two were later amalgamated. Succession, in accordance with Synteng custom, went always through the female line, the reigning Siem's heir being normally his sister's son. The dynasty was deposed and its territory annexed in 1835 as a result of its pertinacity in the vexatious habit of kidnapping British subjects for human sacrifice at Jaintiapur and Phaljur. The names of known rulers are twenty-two or twenty-three in number, of which the last six reigned between 1731 and 1835, their dates being known with approximate accuracy. If we may infer from this that six reigns go to a century, the traditional list takes us back to about 1450 A.D., to one Mān Gossain, from whose name one infers that these Siems were already subject to Hindu influence. Behind this the traditions of the Jaintia Hills go back to one U Loh Ryndi, who caught the first ancestress of the Nartiang and Jaintiapur houses in the form of a fish, which he took home and mislaid. The fish, of course, turned into a charming girl who swept and tidied the house in his absence, resuming her fishiness when he came home, was eventually caught, married, and bore to U Loh Ryndi two daughters, Ka Raputong and Ka Rapunga, from whom the two Siemly families descended.

I give the notes taken on this tour in the diary form in which I have them, as it is as convenient for the purpose as any other. Irrelevant matter I have largely omitted.

October 15th. To Laitlyngkot to try and find the caves, which are said to have huge monolithic doors, but my guide did not succeed in finding the place. I noticed a dolmen in which the bones of the dead were buried, males to the right and females to the left. It had male stones standing behind it and other dolmens, not tombs this time but merely memorial female stones, near by.

The Khasi with me said that he could not tell whether the Khasis came to their present land from the east or from the west, but they came from the land of great fish, which it is still

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tabu for them to eat. I fancy he referred to the *guriya*, a large siluroid which is likewise tabu to the Chang Nagas.[1]

I was told later, by Mr. Rynjah in Jowai, that different clans tabu different fish, at least some do, and regard themselves as descended from the fish tabued.

October 17th. To Jowai. Near Shillong I had noticed hill rice grown in a manner the reverse of the irrigated terrace system, the ground being trenched in close lines between the sown plots, apparently to carry off the water,[2] but at Puriyong and onwards in the Synteng country I saw real terraces creeping up the slopes from the flat cultivated valley bottoms.

After passing Puriyong I saw the old site of the village of the Siem of Malyngiang, who was driven out by the Siem of Nartiang (of the Jaintiapur dynasty). There are several good dolmens and menhirs here, (Plate 20, fig. 1), and further on, near Jawdaija, a stone circle like an Angami *tehuba*, but I missed the stone dish, apparently a hollow in the top of a cromlech, for the receipt of tolls.

Early in the day I noticed a dog with his ears cut in the Naga style.

October 18th. To Nartiang-Bazar and back again to Jowai, 26 miles. About halfway I passed a knoll with an unusual horse-shoe shaped cairn on the top of it. One side of the knoll had been terraced for some purpose at some time or other. Further on was a square tank with a dissolith[3] by the side of it and others not far off.

Nartiang struck me as an attractive site just above a considerable river. Both the place and the people seemed less sophisticated than elsewhere, and the site was obviously very ancient, as the street is worn away to the depth of some thirty feet between the houses, which are approached by flights of stone steps. The houses were mostly of the hog-backed type that one sees, for instance, in the monolithic temple at Maibong in the North Cachar Hills, only the fall of the porches toward the front is much more marked, for the Synteng house, unlike the hog-backed Bengali house of Sylhet or Mymensingh, has the entrance at one end and not at the side. In Nartiang the hog-backed type is preserved even in houses roofed with old kerosine tins or with corrugated iron (Plate 23, fig. 10), sometimes with the addition of a smoke vent. The compounds looked very clean, and the mud stoeps of the houses were beautifully 'leeped,' being reminiscent somehow of Manipur. Of the old palace only the front wall and covered gateway is left, and the wall fast falling down (Plate 21, fig. 5). Quite recently a large section had fallen

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[1] See Man in India, II, 100.

[2] The Maring Nagas in the Manipur State run diagonal trenches across their jhums to keep them from detrition.

[3] *Vide* Perry, *Megalithic Culture of Indonesia*, p. 16.

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over on to a dolmen in front of it, but the roofed gateway with steps up to it is intact (Plate 20, fig. 4). The roof of this gateway is also hogged. The bricks used are small and flat like those at Dimapur. Outside the wall is a square raised plot, and on it again what appears to be a square stone sitting-place like the Angami *baze*. In front of a house in the village I noticed a small rough square cairn of the same sort of type, but very degenerate, and quite recent, which they told me had been put up by the owner of the house "as a puja," so apparently there are a few of the Ancients left, even in this hyper-evangelized tract.

From Nartiang to Nartiang-Bazar is about a mile, through what is now jungle, but was probably once an inhabited town. There are several large tanks about, one of them very large, and traces of a rampart or embankment of some sort. A stream crossing the path is bridged by a single monolithic span twenty-six and a half feet long, and at the bazar itself there is another small tank with a dissolith beside it. As in the Kachha Naga country, where dissoliths replace the pairs of menhirs or single or grouped menhirs elsewhere in favour in the Naga Hills, there seems to be a close and constant association of stone-erecting with water. The bazar itself is a wonderful collection of menhirs and dolmens (Plate 23, fig. 11). The biggest menhir still standing measured 26 feet[1] from the ground level to the top, 6 ft. 6 ins. in breadth and 2 ft. 8 ins. in thickness, and had an enormous flat stone in the form of a dolmen at its base. But the whole clearing, which is surrounded by big trees, is a mass of smaller menhirs and dolmens, and in among them, though a mile from the nearest dwelling-place, are rows of little huts constituting the local market—no doubt a survival from the time when the town filled much of the space between this market place and the palace. It is of interest that one of the traditions of the Dimapur stones is that they occupy the site of the ancient market-place of the Kachari capital, for Nartiang-Bazar undoubtedly reminds one of the Dimapur "Rajbari." The fondness of the people, particularly the women, for markets is one of the striking things about the Jaintia Hills. The smallest villages have market-places, and those of Jowai and Nartiang seem large out of all proportion to their population. This is a trait shared by the Manipuri, but quite foreign to the Naga, except in the Ao tribe, for the Aos make a great thing of the Mokokchung weekly market, whereas repeated attempts to foster a similar institution at Kohima and at Wokha have always been utter failures.

I noticed the Synteng women wearing the cloth gaiters

[1] Gurdon, *The Khasis* p. 153, gives the height as 27 feet. Possibly the ground has risen since he measured it. Certainly the undergrowth has much increased since he took the photograph reproduced opposite p. 154 of that work.

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likewise associated with the Ao and Sangtam Nagas, as with the Palaungs of Burma,[1] who have, of course, linguistic affinities with the Khasis and Syntengs. The Khasia women seem to have substituted for their national gaiter a footless stocking of knitted wool.

Jowai is a welter of religious sects. There are at least seven hereabouts, viz.

The Welsh Presbyterians, known as *Kristan*,

The "Church of Christ," known as *Balang-trairi* 'native sect,' consisting of local schismatics from the above.

The Gospel Trumpeters or "Church of God," generally spoken of locally as "Trumpets," being the followers of a well-known Khasia evangelist.

The Unitarians, known as *Nongtarian*.

The Catholics.

The Church of England, known as *Shor*, a corruption of the word "church."

The Ancients, called *Shnong*, that is 'Steadfast,' those who have, to use the Naga expression, 'not shaken' from their old beliefs, but also including converts to the various sects who have been excommunicated for backsliding.

October 20th. To Jarain, 12 miles. A little way out of Jowai is the *Khim-mosniang*, "the pass of the stone pig (or pig-stone)," where the path goes between two hillocks, on the inside of one of which is an outcrop of rock the top of which has been cut away so as to give some resemblance of a quadruped to its core. The carving might equally well be the upper part of an elephant, but it is known as *U Mosniang* (Plate 22, fig. 8). Close to it, cutting the path at right-angles, is an old earthwork surrounding at least seven hillocks and an area of from a quarter to half a square mile.

A little further on is a burial cist, backed by a menhir and enclosed within a wall, and then the path winds over open hills dotted right and left with menhirs and dolmens. A little square tank was passed about 20 ft. by 20, with a dissolith alongside it, and the association between this symbol and water is to be seen again at the river, where I saw a dissolith by the old ford now abandoned for a bridge. After climbing up to and crossing the ridge, a circular cairn about twenty paces in diameter is passed. A menhir with a broken dolmen in front of it forms part of the circle, and is balanced by an extra heap of stones on the opposite side of the circumference; in the middle a depression. Probably a burial place (Plate 21, fig. 6).

Later on, when passing a big menhir very obviously erected with the small end downwards, Visar, my Angami orderly, remarked that the Khasis and Syntengs seemed to set them up like this frequently, whereas the Angami regards it as genna, and always puts the big end of the stone in the earth. I said that at

[1] *Vide* Milne, *The Home of an Eastern Clan*, p. 213.

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any rate the Kachha Nagas followed the Khasi plan, and instanced a specially large and prominent stone at Lakema. Visar retorted yes, and because that stone had been put in upside down the whole clan of the erector had become extinct. All the same, I think I have seen other stones put up the same way in the Kachha Naga country, and the Konyaks ordinarily put them in that way, carefully selecting suitable stones for that purpose. On the other hand many Khasia and Synteng stones are erected with the thick end downwards, as at Nartiang-Bazar.

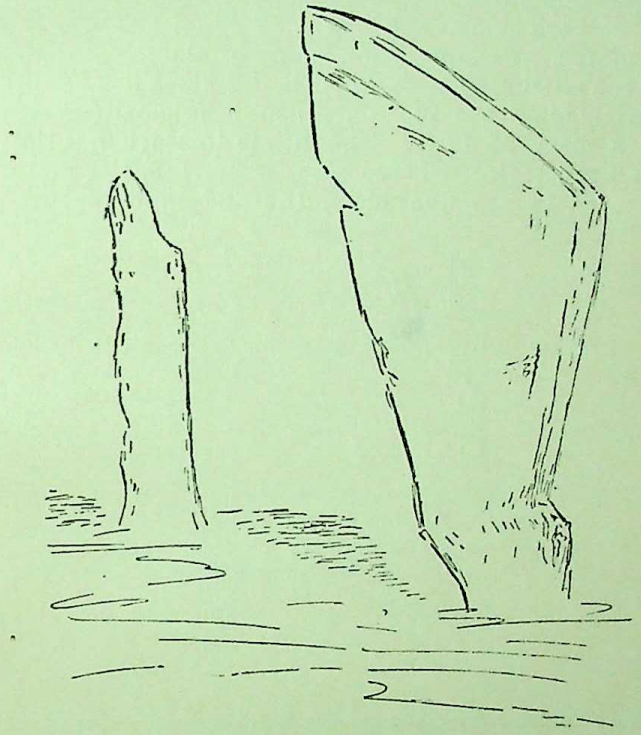

Fig. 1.—Two menhirs between Jowai and Jarain.

Visar also mentioned that it was very necessary to select a "good" stone. Any stone will not do, but the old men can determine which will. A man of Khonoma, who neglected their advice and pulled one of his own fancy, had no luck with it. The usual three watchers took their drink and kept vigil by the stone till midnight, and then went home, but in the morning the stone was flat, presaging death to the puller or at least to one of his familly. His wife died shortly after.

Three miles off from Jarain, near Maput village is a fine megalithic bridge made of old by the Jaintia Siems (Plate 21, fig. 7). It is called *Thluumwi*, which, I understand, refers to the fact that there are three stone spans, but as a matter of fact there are six (Plate 23, fig. 12), spanning ninety-six feet from end

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to end, though there are larger than the others, or rather were, for one is broken and fallen into the bed of the stream, its place being taken by a modern span of wood and corrugated iron. The story is that a man took an elephant over the original stone and cracked it, so that it afterwards broke and fell. It is difficult to believe this story. What is left of the original bridge would obviously carry any number of elephants. Of the six spans the first is a block measuring 16 ft. × 6 ft × 1 ft. 8 ins., the second 17′4″ × 5′11″ × 1′ the third is 20′10″ × 6′8″ × 1′4″. On this slab are two shallow incisions of the shape of spear-heads, more or less, one at each side at the near end. Conceivably they are masons' marks. I cannot think what else they could be. The fourth is the missing span, of which half lies in the river bed and half leans against the pier on which it originally rested. It spanned a space of 17 ft. The fifth is 15′1″ × 6′9″ × 1′5″; and the sixth 8′ × 6′ × 1′3″. These slabs are rectangular and neatly finished. There are five piers, the first built of two great

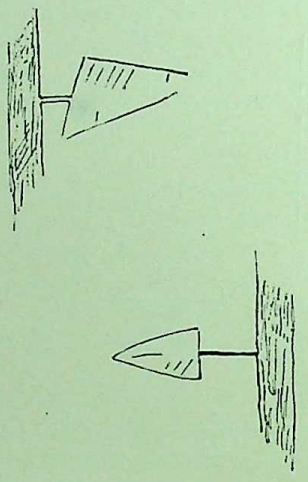

Fig. 2.—Shallow depressions cut at each side of one of the slabs of Thluumwi near the edge, and opposite each other.

blocks of stone and trimmed to a wedge shape at each end, the second of three such blocks, the third and fourth of two each, and the fifth pier consisting of a single block of stone standing on its edge. Altogether an impressive structure, though perhaps less so than the somewhat similar Sil Hako bridge near Kamalpur in Kamrup, which is reported to consist of twenty spans each about seven feet long by nine feet broad raised about twenty feet above the ground, the river having since changed its course and left the bridge dry.[1]

[1] An account of this bridge was published by Capt. S. T. Hannay in the J.A.S.B. Vol. XX, (O.S.), 1851, p. 291 together with a drawing of it. I am indebted to Professor Bhuyan of the Cotton College, Gauhati, for the reference to that article.

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The path, too, is another relic of the Jaintia raj, and is similar in construction to the approach road up the hill to the famous temple of Kamakhya in Kamrup. It is paved with roughly dressed 'crazy' flag-stones squared off at the edges and neatly laid. This paving is not continuous, but is found wherever the gradient is steep and so liable to cause a very slippery surface when the path is wet or worn. The paving also appears in muddy places. It is mostly about three feet wide, but six feet just at Jarain. It is still kept up.

At Jarain is a biggish tank, made by damming up the head of a small valley. Behind it is a knoll slightly terraced, where the Jaintia princes had a fort or some other building.

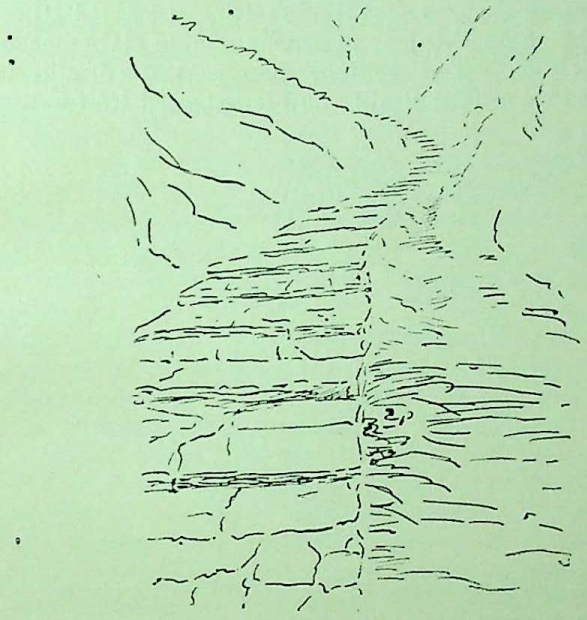

Fig. 3.—The paved causeway from Jaintiapur to Jowai.

October 21st. Between Jarain and Syndai the Um-nyakaneh river is crossed by a much finer megalithic bridge than the one mentioned above, though like it, it has lost one span (Plate 24; and Pl. 25, figs. 14 and 15). It seems to have been originally planned to consist of three gothic arches built of enormous blocks of stone, but only one such arch remains, and the others must have collapsed either in or after construction, and been replaced by huge flat slabs approached by steps from the top of the remaining arch. This bridge is the one described, and rather inaccurately depicted, by Hooker in his *Himalayan Journals* (II, ch. XXIX). One of the stones used in building the arch was $7'10'' \times 2'4\frac{1}{2}'' \times 1'5''$, and there were others as big; one of the pointed blocks used in the pier carrying the far side of the

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arch, five-sided, measured 4′6″ along one side, 3′ along each of the other four and 3′5″ in height. There was no key-stone, the point of the arch consisting of a jamb, two blocks on each side meeting there. Some of the blocks were slotted in places, no doubt for manipulation, but, even so, accurate building with such huge blocks was no small achievement. The second span rests at the near end on a pier consisting of a single flat stone placed on its edge and measuring 11′3″ wide by 8′10½″ high and 2′ thick, this pier being contiguous to the outer pier of the arch. The other pier was built of huge blocks like those of the arch, laid in five layers, and the remaining pier consists of odd and broken blocks laid on their sides on an outcrop of rock in the river bed. The second span consisted of two long flat slabs measuring respectively 13′7″ × 4′7″ × 1′10″ and 12′10″ × 5′ × 2′. The third span was a single slab measuring 19′10″ × 8′7″ × 2′3″. The fourth span is broken and is at present crossed by a light timber and corrugated iron footway.

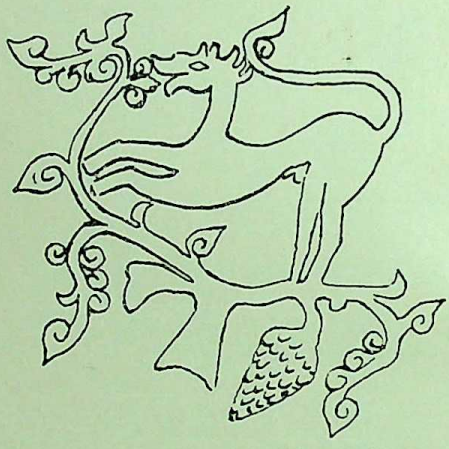

Fig. 4.—The lion carved on the Um-nyakaneh bridge.

The outer pier of the arch was adorned in what was, or would have been, the angle between the two arches, with a carved rosette of concentric circles, and above that appeared a carving of a very horsey-looking lion with a waspish waist prancing in the boughs of a highly conventionalized pine tree. It must be inferred from its tail that it is a lion, and it has a general family resemblance to the lions of the Kasomari monoliths and of the Manipur stone at Kohima.

This bridge also is said to have been broken by an elephant. There is obviously something in the tradition. Probably the original arched bridge was partially broken down by an elephant, perhaps when still in the course of construction, and that this led to the substitution of the simpler and presumably much older slab form of bridge for the unsatisfactory and then, no doubt, newfangled arches. It is difficult to see how the passing over

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of an elephant could possibly have broken down spans of the slab form either in this or the former bridge, which were probably breached by one of the violent earthquakes to which the Khasia and Jaintia Hills are subject.

I had to cut away masses of jungle from the piers before I could attempt to photograph the bridge. Roots have everywhere forced their way into the interstices between the blocks of stone, and some of the smaller stones are already beginning to work loose. It would be the greatest misfortune if the remaining arch came down owing to neglect.

Near Syndai I passed a roofless building of unmortared stone, which I was assured had been erected of old by the Jaintia rajas, but it looked suspiciously European, and I found out later that it was only an abandoned Inspection Bungalow.

From Syndai I went down to the famous cave, about two miles away. The opening is smallish (Plate 26, figs. 17 and 18), but there is room enough within, and a vast number of stalactites and stalagmites, some of them smeared with red paint by sadhus, who come up from the plains in some numbers and worship these naturally formed lingams. There is an inscription near the mouth of the cave in Bengali characters, but I could not read it in the bad light, and had nothing to take a rubbing with. It is surmounted by some sort of symbol which I could not make out.

October 22nd. To Jaintiapur, about 7 miles. The paved causeway is almost continuous down to the foot of the hills, but being made largely of sandstone has worn very much worse than the granite or lime-stone higher up. There is a monolithic span across the Am-khut stream (*um*='water' is replaced in this locality by *am*. *Cf. am*='*stream*' in some parts of the Konyak Naga country). All Along there is flourishing *pan* cultivation, the *pan* vines being grown on trees, as by the Konyak Naga, but a great deal more closely and thickly. Syndai, like Namsang in the Naga Hills, depends almost entirely on *pan* for its existence, selling it in the plains and buying rice to carry back into the hills. The Syndai *pan-baris* are irrigated by bamboo aqueducts bringing water from the nearest stream. This keeps the soil damp and the air moist and cool, an effect which Naga *pan* cultivators obtain by growing it in heavy forest, instead of in land which has been partially cleared and is much less heavily treed, as the Syntengs do.

The bullet-bow is in great evidence here. From the smallest boys upwards everyone one meets seems to carry one, even if he have a heavy load as well.

The Am-sorai stream, now crossed by a light timber bridge, must once have had a stone one, as in the bed of the stream I noticed several portions of great blocks that had been squared and slotted for building purposes. When crossing the Am-kumbeh stream, one appears to be on a high earth embankment.

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I got down into the stream to see how the water got through and found a fine megalithic arch spanning the stream, with a causeway of similar construction filling in the space on each side between the bridge and the banks. Much of this causeway must at some time have been broken down, and re-placed by ordinary rough stone-work, probably made by cutting up the fallen or broken blocks. Grass is growing on the top, and the tangle of jungle hanging down on each side entirely hides the stone-work underneath until you get into the stream below. The arch is of the same type as that over the Um-nyakaneh, only there appears to have been an attempt to use the key-stone principle, though the key-stone is not quite in the centre of the arch.

A little further on is a tank cut entirely out of the solid rock, with gutter and drains likewise excavated out of the rock to bring the rain-water from the slope above it to keep it full (Plate 25, fig. 16). The tank is 22 ft. 11 ins. broad by 29 ft. 2 ins. long, and descends inside by three broad steps, the depth in the centre being 6 ft. Opposite the path, on the hill side of the tank, is an elephant carved in one block with the tank so as to stand in the water and be almost submerged when the tank is full to the brim. Opposite it is a flight of 6 steps to the bottom of the tank left in the block when excavating. Somewhere near here there was, I was told, a rock carving of the sun and moon and other emblems, but somehow I missed it, as my guides kept saying that it was further on, until we got to the plains, when they admitted that they did not know where it was.[1]

The Am-lubon river is crossed by a modern timber bridge resting on the piers of the megalithic bridge which preceded it (Plate 27, fig. 20). It was obviously spanned originally by flat stone slabs like that at Maput called Thluumwi. There are five piers of similar construction to those at Maput, but a great deal higher, and of the six monolithic spans only the two end ones, much the smallest, still remain. The debris of the others are strewn about the river bed. Just beyond the bridge are a couple of dolmens (Plate 27, fig. 21). For the rest of the path there are only small streams or fordable rivers crossed by single stone slabs or by Irish bridges, until the foot of the hills and the low-lying land of the Jaintiapur parganas is reached, and then there is a ferry

At Jaintiapur itself many of the houses are purely Synteng in construction. Except some single slab bridges and some very fine menhirs and dolmens of the Khasi type (Plate 27, fig. 22), some of them, as at Nartiang, under the compound walls of the old palace or temple enclosure, I saw no megalithic work at Jaintiapur itself except the remains of a large round stone pillar

[1] Mr. W. A. Cosgrave, the Deputy Commissioner of the Khasia and Jaintia Hills, tells me that he has seen it since, and that it is of little interest, consisting merely of some circles carved on the ground in the stone.

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at the top of the steps of the plinth of what was once the durbar hall. This pillar is broken at the top, and has sunk to a semi-recumbent position (Plate 26, fig. 19). I did, however, see some light monolithic house-posts made by the present Nripa, the lineal representative of the *ci-devant* princes. They were of the same pattern as common wooden house-posts, forked at the top to carry the rafter. Everywhere are ruins of palaces, walls and temples, all of brick and overthrown finally at the great earthquake of 1897.[1]

The population of Jaintiapur is still largely Synteng and their houses made with the typical hog-backed Synteng not coming very low over the front door, which is at one end. The

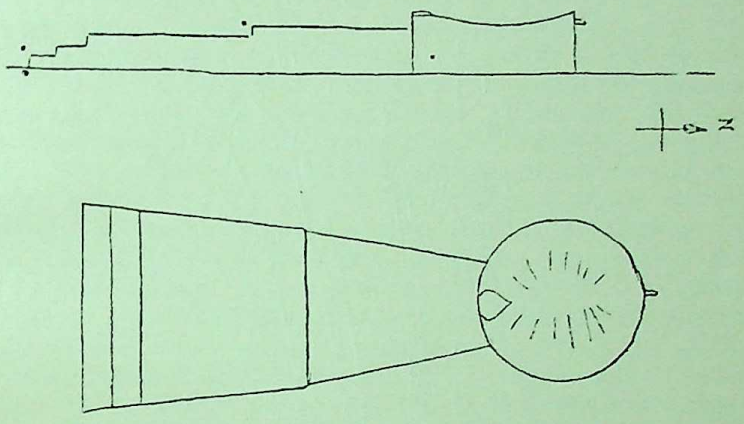

Fig. 5.—Plan and Elevation of platform for human sacrifice at Jaintiapur.

Bengali type is also hog-backed, but has the door at the side. It is said that this form is adopted as being less liable to destruction by cyclones. As at Nartiang the old Jaintia Raj gateways are all covered by a hog-backed roof[2] and are likewise made of a double doorway with a recess on each side between the two. Inside the wall of the old temple or palace compound is a big square plinth with a square "altar" in the centre of it, faintly suggesting pyramidical construction (Plate 28, fig. 23). The altar, which is of stone, used to be protected by a thatched shrine, and was the abiding place of the family goddess of the reigning house. Opposite to the stone steps up to the plinth

[1] For a brief account of this remarkable phenomenon and a mention of previous great earthquakes in Assam, see Gait, History of Assam, p. 344. He mentions among other things that "huge blocks of stone were tossed up and down like peas on a drum" and he writes as an eyewitness. The wonder is that any megalithic work survives intact to our time in this area, and the fear that the next great earthquake may deprive posterity of all these relics of a vanished age.

[2] The gateway of the approach to the famous temple at Kamakhya near Gauhati is of the same pattern.

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is the old place of sacrifice (Plate 28, fig. 24). Two successive broad flat stages lead up to a circular platform with a spout to carry off the blood facing the steps to the altar, and a heart-shaped stone protuberance pointing inwards on the opposite edge. Between these the circumference slopes down to a central depression, and it is said that there was originally a central drain to the spout and about it a hollow shaped to take the human form. Here it was that the human sacrifices were regularly made, which ultimately led to the downfall of the Jaintia family, though the sacrifice which actually occasioned it was made at Phaljur some miles distant.

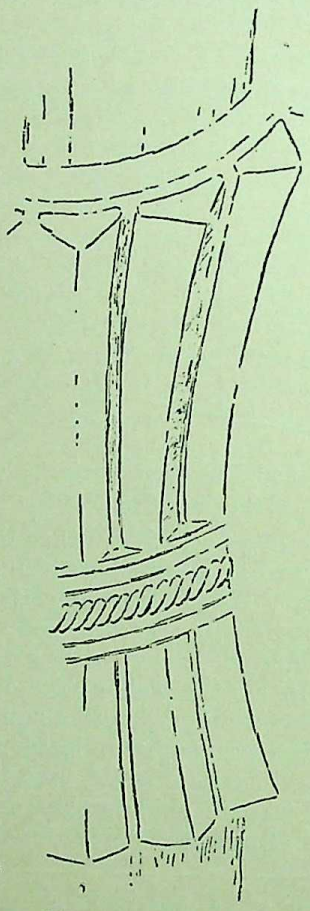

Fig. 6.—Detail of moulding on corner pillars of compound wall at Jaintiapur.

At one corner of the compound the walls meet to make, on the outside, a partly circular column in brick, and I noticed that it was carved or moulded into "enemies teeth" pattern, which is typical of the Dimapur cylindrical monoliths, and

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also, apparently, of many Naga house-posts.[1] The Jaintiapur version, however, differs from that of Dimapur in that the upper rays of the pattern are longer than the lower, instead of *vice versa*, and the tie is made in a rope pattern. On the outside of the southern wall of the compound are stucco mouldings (Plate 20, fig. 2), in relief, representing horses, an elephant, a lion like that of the bridge and likewise prancing in a tree, an elephant being caught and tamed, a winged female being and a giant with a club fighting a crocodile (also Plate 22, fig, 9). All these reliefs are much damaged, and probably have not long to last.

Inside the compound the orientation is arranged so that the goddess on her altar would face south, and the steps to the plinth ascend from south to north. The place of human sacrifice is immediately south of this, and the main entrance is in the middle of the south wall. In the north-east corner is a subsidiary door and there is a well to the east or north-east of the place of sacrifice, and in the south-west corner is an old dry well into which the bodies of the victims were thrown, but it is now filled up with rubbish and old bricks with the idea of obliterating it.

The present Nripa's heir, if he had one, would be his sister's son, in accordance with Synteng custom, but though he has daughters, he states that has no heir, so presumably his mother, grandmother, etc., left no descendants in the female line, and the Nartiang branch of the family seems to have been already amalgamated with the Jaintiapur branch, when they came into contact with the British. The Nripa kindly shewed us round various sites of ancient buildings and dilapidated ruins, but there is little left of interest beyond what has been mentioned. Such mural decorations as remain are in the form of floral panels, Muhammadan in style, and comparatively recent in date.

In Jaintiapur also I noticed dogs with their ears and tails cut in the Naga fashion.

Generally speaking my impression of the Syntengs was that they resemble the Manipuris and the Ao Nagas more nearly than the other people of Assam that I know. Their features recall them, but most of all their fondness for marketing recalls the Manipuri. Like Manipur the country side is strewn with markets, the smallest village apparently having some sort of *hāt* and everyone going to or coming from market somewhere. As in Manipur too it is principally the women who do the trading. Mr. Rynjah, who knows something of the Naga Hills, says that he observes some likeness between the Khasis and Syntengs and the Kachha Naga, an observation the more interesting in that the latter tribe, unlike the Angami, put up their stones not in the form of two upright stones, but as one upright and one in dolmen form, representing respectively, as with the Khasis and Syntengs, the male and the

[1] See the *Journal of the Royal Anthropological Institute*, LII, 60.

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female. The speech of the Syntengs, however, reminded me most of the staccato language of the Konyaks in its delivery and in the general sound of it.

October 27th. Gauhati. I visited the collection of the Kamarupa Anusandhan Samiti. Outside there is a remarkable square monolithic doorway (Plate 28, fig. 25), the fourth side of which has been broken away. The sides are 6′6″ long × 2′1″ deep × 11″ broad. It is said to have come from some temple in the neighbourhood. There is also a huge stone carved with the figure of an eight-armed five-headed goddess, which formed the central stone of a temple dome. For a stone to occupy such a position it is of exceptional size. The circular carved centre is 6 ft. across, and the whole is 7′5″ one way by 7′9″ the other and from 1′2″ to 2′6″ thick, and appears to have been larger until broken by its fall.

It was here that I heard a legend new to me about the Manipur stone at Kohima.[1] It came from a Manipuri student of the Cotton College, who related that when Jai Singh (otherwise Chingtung Komba) went to ask the Ahom king for help against the Burmese, he stood on this stone and prayed, and the print of his foot remained in the stone as a sign that he would regain his kingdom. The legend is picturesque but singularly inaccurate, as Chingtung Komba reigned in the XVIIIth century, whereas the Kohima stone was put up by Gambhir Singh, when the Manipuris sacked Kohima in 1833. This event was still remembered by two of the oldest inhabitants when I came to Kohima in 1912, and they told me that the Manipuris buried a Kohima boy alive under the stone;[2] the stone has been more than once moved from its original site, and is just being moved again.

It seems to me likely that the story now attached to the Manipur stone at Kohima has been transferred from the stone called *Khozatse*, on which Zhotsoma divide up the fish which they catch in the Dzuna river, since this stone is actually on the old Manipur-Dimapur route down the Dzuna valley, abandoned since we occupied Kohima and long gone back to jungle. Khozatse bears a single foot-print only and not two like the Kohima stone.

A very brief account of the history of the Synteng princes of Jaintiapur will be found in pp. 27 to 32 of the Sylhet Gazetteer (Assam District Gazetteers vol. II) and in Gait's *History of Assam*. The places visited on the way from Shillong to Jaintiapur will all be found on the Topographical Survey Map of the Khasia and Jaintia Hills on or near the bridle path from Shillong to Jowai and from Jowai to Jaintiapur.

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[1] *Vide* Hodson, *The Meitheis* , p. 92.

[2] The Burmans used to fix their boundaries by burying men alive, *Vide* Scott & Hardinan *Gazetteer of Upper Burma and the Shan States*, 1, ii, 36.

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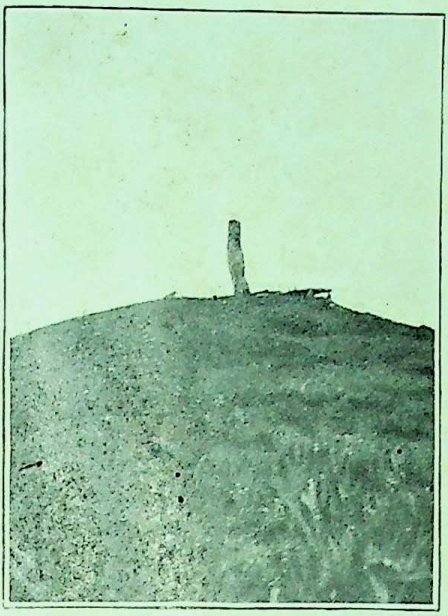
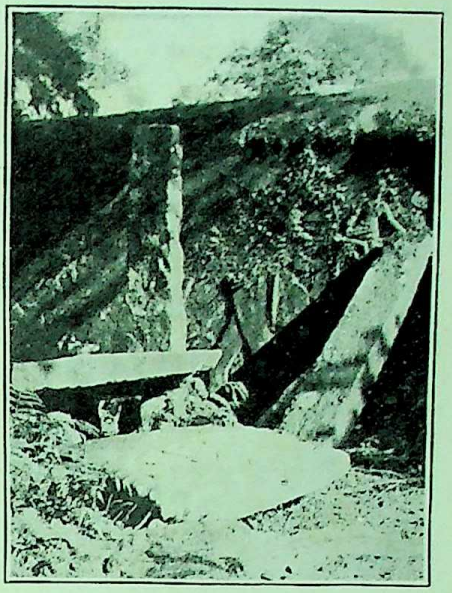
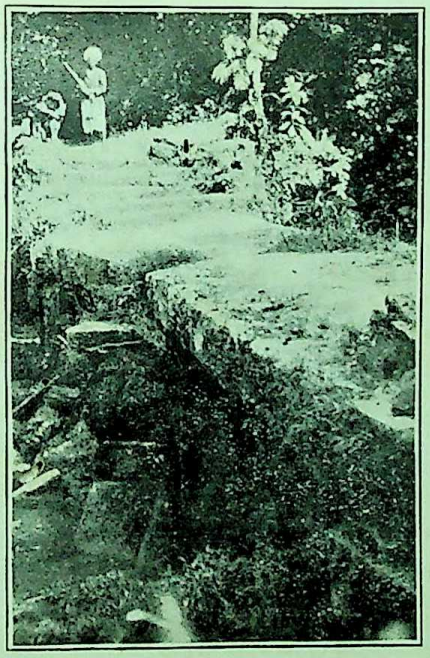


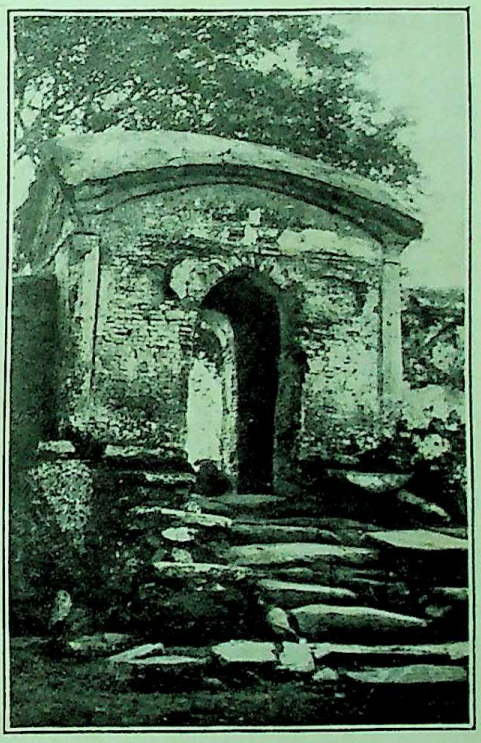
1. Menhir and cromlech at Malyngiang.



2. Stucco Mouldings at Jaintiapur.



3. Bridge on the Um-nyakaneh.



4. Gateway at Nartiang.

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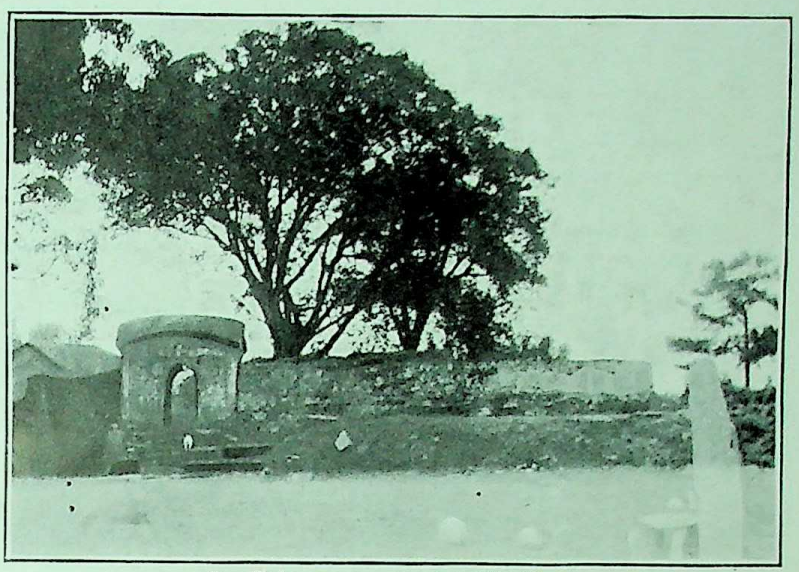
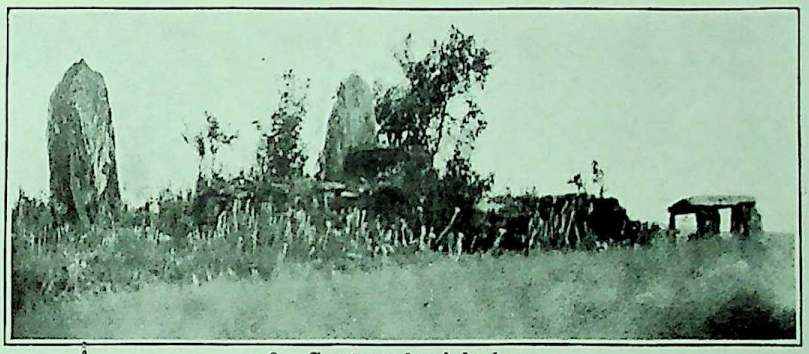
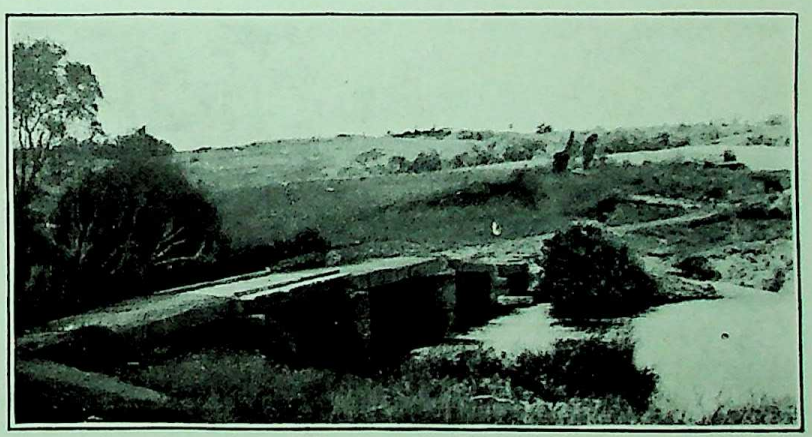


5. Palace compound at Nartiang.



6. Synteng burial place.



7. Thluumwi.

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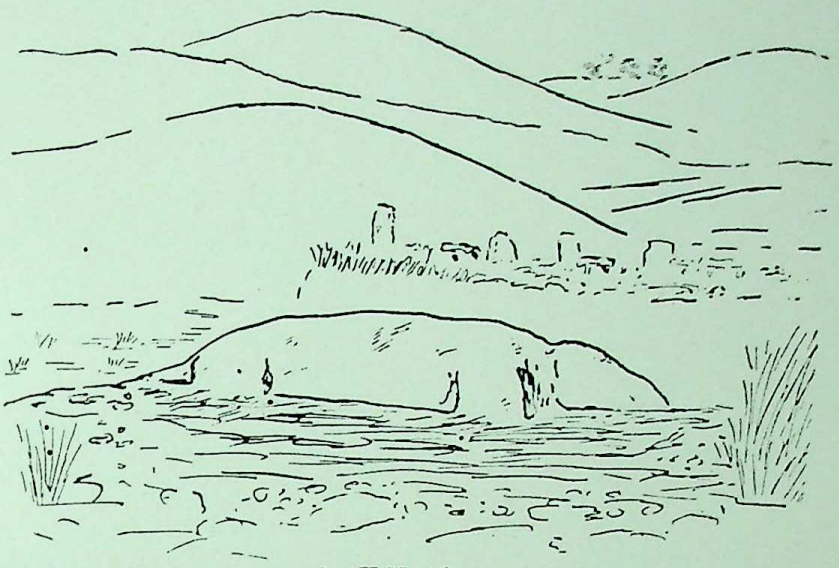

8. U Mosniang.

9. Stucco Mouldings at Jaintiapur.

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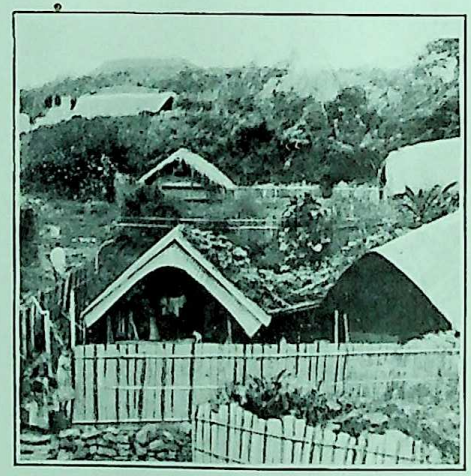

10. Modern houses in Nartiang preserving the old types in spite of corrugated iron.

11. Nartiang Bazar.

12. The Thluumwi.

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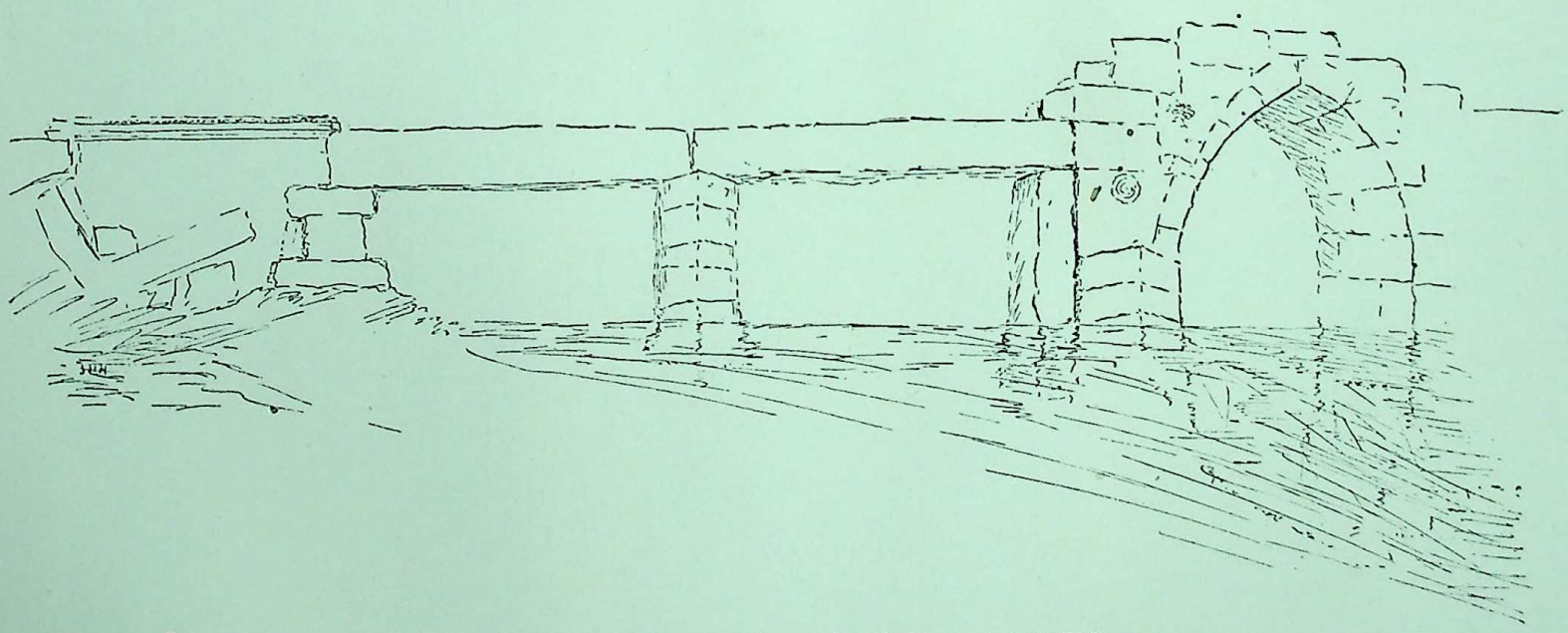

13. Megalithic Bridge over Um-nyakaneh River, Jaintia Hills.

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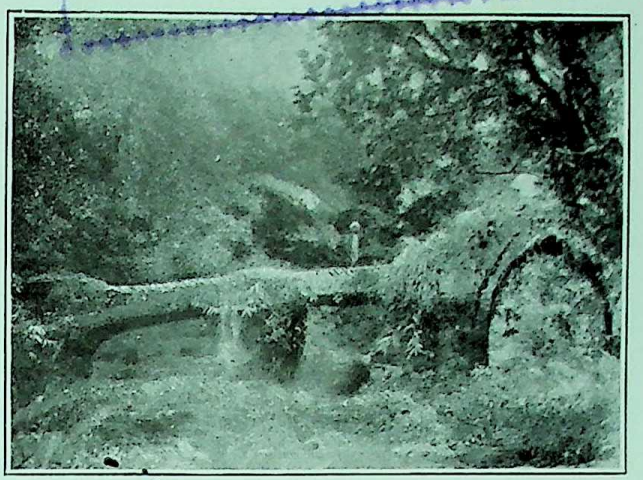
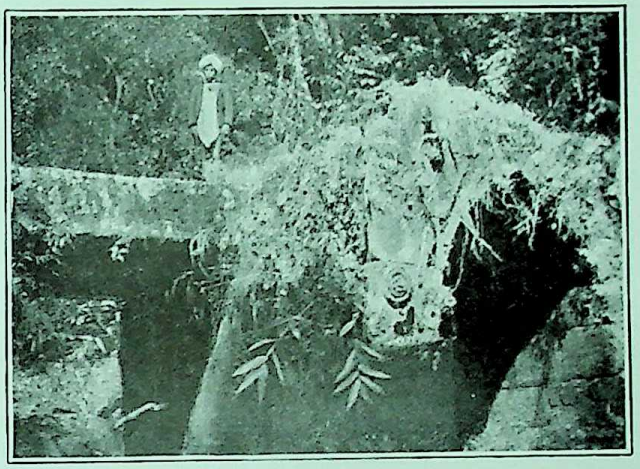
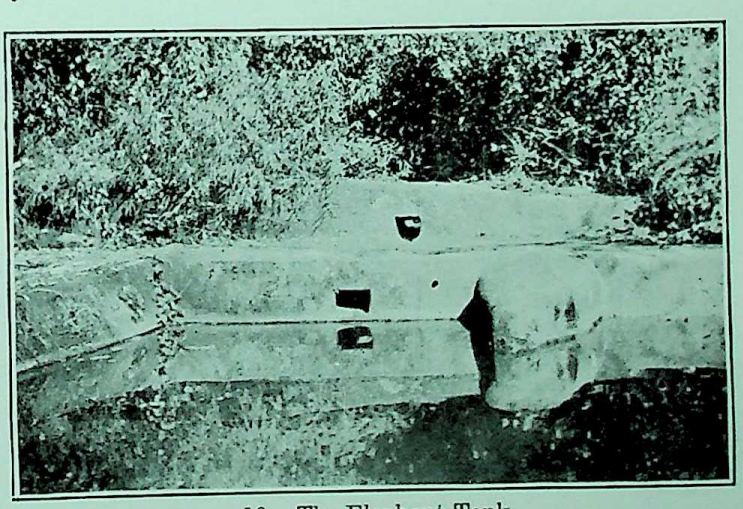




14 and 15. Bridge over the Um-nyakaneh.



16. The Elephant Tank.

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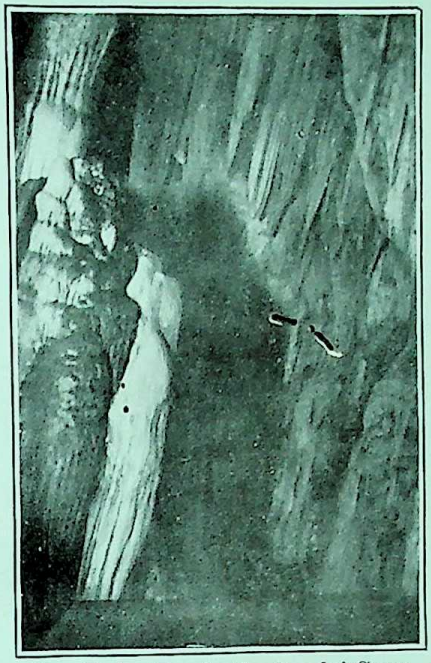
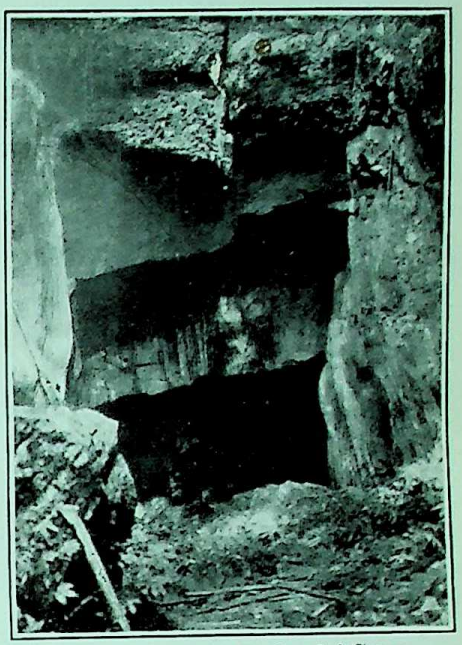
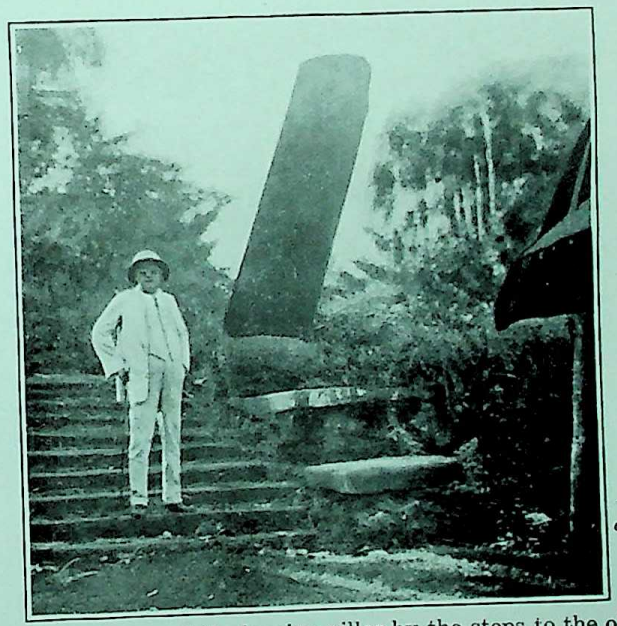


17. Stalactites in the Syndai Cave.



18. Entrance to the Syndai Cave.



19. The Nripa of Jaintia and the leaning pillar by the steps to the old durbar hall.

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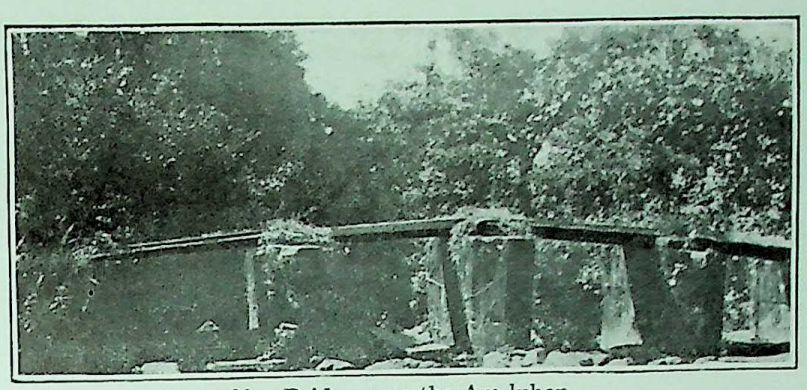
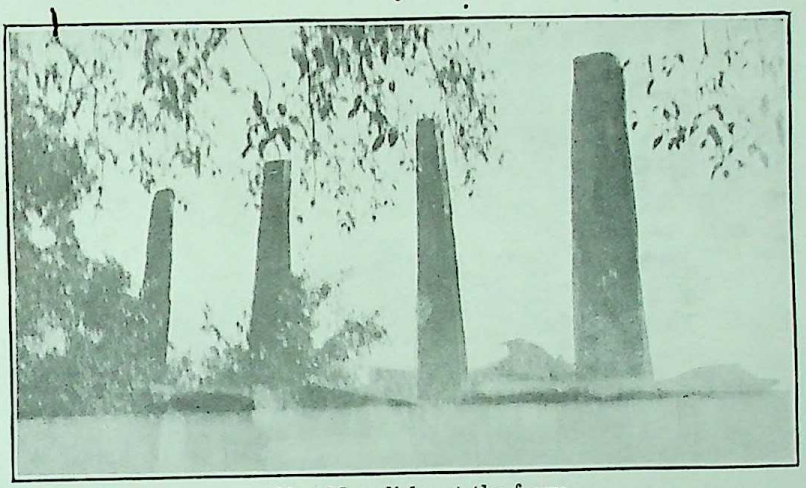
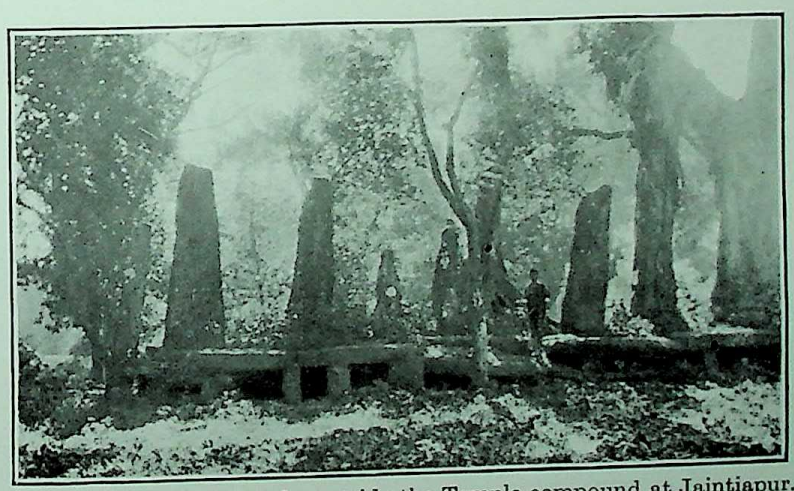


20. Bridge over the Am-lubon.



21. Monoliths at the ferry.



22. Menhirs and cromlechs outside the Temple compound at Jaintiapur.

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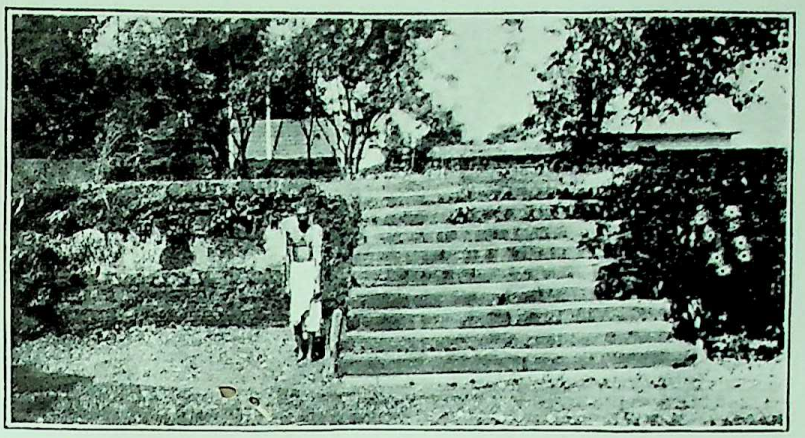
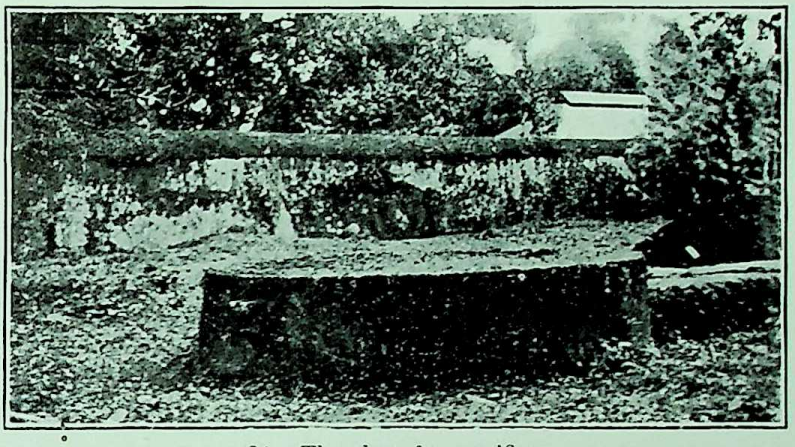
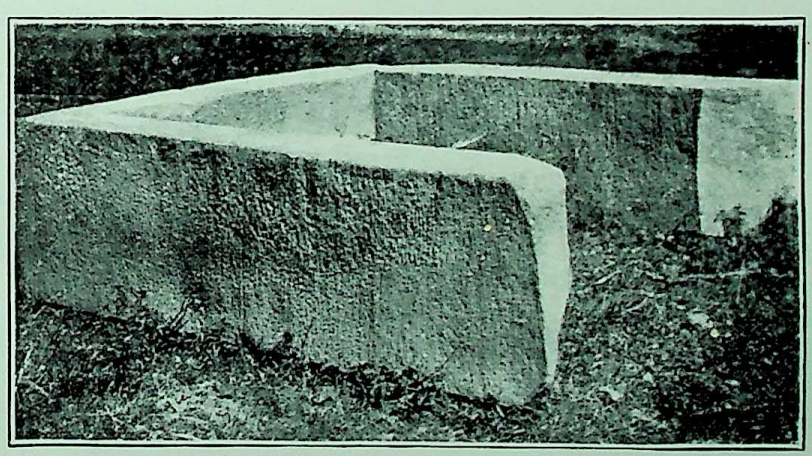


23. The temple plinth and altar.



24. The place for sacrifice.



25 Monolithic stone doorway at Gauhati.

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The Bigonial breadth of some Hos of Kolhan.

By D. N. Majumdar.

In an article on the 'Physical Characteristics of the Hos of Kolhan' published in the Journal of the Asiatic Society of Bengal, (New Series), Vol. XX, 1924, No. 5, I supplied some somatological data of the Hos. Since then I have been engaged in recording ethnographic details of the people and I hope soon to publish the statistical conclusions at which I have arrived on the strength of those data. In the meantime I give the bigonial breadth of some 75 Hos, with their names, ages, and native villages. As the measurements were taken on subjects formerly dealt with, it will be easy to compare the bigonial distances with the bizygomatic breadths of the Hos recorded in the above-mentioned paper. For convenience I have given the measurements for each sept separately. The measurements are recorded in millimeters.

Kalundia.

Sept.

Name.	Age.	Native Village.	Bigonial Distance.
Juria	18	Kokchak	87
Bamia	18	,,	96
Turam	19	,,	91
Kiti	20	,,	100
Khari	29	,,	90
Gardi	30	,,	100
Pundu	30	,,	100
Dulphu	31	,,	105
Marakhi	34	,,	100
Chamra	34	,,	103
Mahati	35	,,	100
Haricharan ..	35	,,	103
Muralidhar ..	38	,,	96
Rengo	40	,,	97
Hidu	42	,,	97
Bejoy	45	,,	108
Domra	48	,,	105
Jagu	50	,,	90
Mukhi	50	,,	105
Dumbi	60	,,	105

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SAWAIA.

Sept.

Name.	Age.	Native Village.	Bigonial Breadth.
Nripat	20	Khaspukuin	95
Dubro	26	Rajabasa	93
Uli	30	Hilū	95
Sivai	35	Gumar	99
Hai	35	Kokchak	95
Jau	45	,,	95
Gosa	55	Gundipoa	95

BARAIMUNDA.

Sept.

Name.	Age.	Native Village.	Bigonial Breadth.
Pradhan	22	Jorapukur	95
Ramai	24	,,	100
Saban	35	,,	92
Muchia	35	,,	96
Lakan	36	,,	95
Modhua	38	,,	96
Birsinha	40	,,	92
Modhua	45	,,	97
Maraki	48	,,	105

DEOGAM.

Sept.

Name.	Age.	Native Village.	Bigonial Breadth.
Satu	18	Dumbisai	91
Sibu	19	,,	93
Bhagaman ..	20	,,	100
Gangaram ..	22	,,	95
Monai	25	,,	95
Gono	27	,,	92
Mukia	27	,,	103
Mahati	28	,,	93
Dulu	28	,,	100
Mohan	30	Karajia	102
Bagun	30	Dumbisai	110

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Name.	Age.	Native Village.	Bigonial Breadth.
Sunua	35	Karajia	96
Nanda	35	Kokchak	97
Gangaram ..	40	Banamdia	105
Gosa	40	Dumbisai	102
Sedhi	48	,,	95
Sambhu	50	,,	97

BANRA.

Sept.

Name.	Age.	Native Village.	Bigonial Breadth.
Sura	20	Raigutu	100
Patar	22	Gitilpir	92
Divar	24	Kitahatu	91
Rando	25	Jorapukur	95
Divar	25	Rajabasa	92
Mangla	27	Raigutu	100
Baji	27	Rajabasa	90
Chakra	28	Galuasa	105
Sunu	29	Kitahatu	94
Nagen	29	Unchuri	95
Sakhari	30	Kokchak	93
Udia	32	Rajabasa	123
Turi	34	,,	102
Bejoy	35	,,	105
Maji	36	,,	95
Durga	40	Kitahatu	96
Divar	55	,,	94
Motai	18	Unchuri	93
Ganga	29	Rajabasa	99
Kande	19	,,	95
Selai	33	Sika	94

PURTY.

Sept.

Name.	Age.	Native Village.	Bigonial Breadth.
Surji	34	Mundaidal	107
Dibar	35	Pendrasali	97
Damu	45	Ambarai	94

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Java and Bali.

(Based on Dr. R. Goris' Monograph, in Dutch, "Contribution to the Knowledge of Old Javanese and Balinese Theology.")

By A. A. BAKE.

The importance of old Java and of Bali, as it has remained up to the present day, for students and scholars of Hinduism is perhaps insufficiently known here in India. The ancient glory of Java is certainly familiar to many Indian scholars, and the development of Hinduism on the isle of Bali might be a question of interest to them, but how few have really given their energy and intelligence to the facts that have been discovered and the problems that remain to be solved.

Certainly the difficulties for Indian scholars are many: Old-Javanese is a subject not easy to master, being of the group of Malayo-Polynesian languages, of a character widely different from the Indian tongues, notwithstanding the enormous inflow of Sanskrit words; besides, most of the research work is published in Dutch and very few have had the opportunity of learning that language. It would be, however, more than worthwhile for Indian scholars to take that trouble. Both parties—Dutch and Indian scientists—would derive benefit from it. For the former many problems are extremely difficult to solve without the help of Sanskritists, trained in India, who are acquainted with religious literature and customs, a knowledge of which it is difficult for anyone trained elsewhere to acquire. The latter, on the other hand, would find a rich reward in making acquaintance with a Hindu civilisation that once dominated vast areas from Sumatra to New-Guinea, in which they would find things of the highest importance, not only in architecture, which is at present the best known, but also in religion and literature, of which only a small portion has as yet been examined.

After the pioneers in the field (of whom Raffles can be counted as one of the first)—some splendid men worked throughout the last century, amongst whom the names of Kern and Brandes are specially brilliant. In the last ten or fifteen years there has sprung up a new generation of scholars, specially trained for research work in Java, Bali and elsewhere in the archipelago. Most of these have been sent out much too recently for great tangible results in the field to be expected, but in the theses, written for their doctorates, for which they had access to the rich treasures of manuscripts at Leiden University, as well as to

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the valuable codices collected by our present leading scholar Professor Dr. C. Snouck Hurgronje, already much of high importance has been published.

The study of Old-Javanese had its special great difficulties, as in Java there was not, like here in India for Sanskrit, an unbroken tradition, because, when Islam got the upper hand all over Java (after having become paramount in Sumatra), the people lost for some generations all interest in matters brought down from Hindu times. No doubt even before that period a special training was required to understand the archaic texts; after it, the old language having been forgotten, people were obliged to accept any suggestion as to the meaning of great parts of those texts that had been saved. So a great deal had to be built up from the very foundation by the first western scholars.

In Bali the tradition was kept much purer, and we will see how many special Hindu features remain in the Puja of that island, even after it had been cut off from Hindu influence for at least six centuries.

Of the scholars of the younger generation some have taken to the archeological side (see the splendid dissertation of Dr. W. F. Stutterheim on Rama legends and reliefs, the only one translated into German), some others have proved that even Islamic mysticism in Java has its roots largely in Hinduistic soil. Some have taken to Old-Javanese texts, and the last dissertation issued deals with the Old-Javanese religious theories as well as with the present liturgic practises in Bali.

In giving a review of this last work I hope to prove the thesis that it is of importance for both Indian and Dutch scholars to come in closer contact with one another.

The book is called "Bydrage tot de Kennis der Oud-Javaansche en Balineesche theologie" (Contribution to the Knowledge of Old-Javanese and Balinese Theology) and is edited at Leiden (Vros) 1926. As this is practically the first endeavour to institute a systematic research in this direction, for which the author had no opportunity to make observations in Bali itself, it is clear that there are many problems left, but it was never his aim to solve everything in this "Contribution."

Dr. Goris clearly states in his preface that, being fully conscious of the incompleteness of his endeavour, he still hopes that his work will contribute to a fuller understanding of the, almost exclusively religious, architectural remains of Old-Java, as well as to a clearer insight into the later Islamic views, a point on which we need not put much stress in this article.

For his purpose he choses two subjects, "dogmatics," and secondly, more or less as an introduction, "religious ceremonies," in which he gives a description of the daily religious

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practises on the island Bali, being the Sūrya Sewana worship of Çiwâditya[1]. His sources were the Balinese codices of the Leiden University and the work of a civil servant Mr. P de Kat Angelino, who, with the help of a Danish artist, has edited a book containing the principal mudras in use during the ceremonies ("Mudras op Bali." Text van P. de Kat Angelino, teekeningen van Tyra de Kleen. Ed. "Adi Poestaka" The Hague 1922, German Ed. Folkwang Verlag (Hagen i. W.) 1922: Schriften Reihe "Kulturen der Erde," Bd. 15).

The codices the author compared with Sanskrit data and he discovered their character to be closely related to the Puranic Sûryârcanas, and also to give some striking parallels with the subject treated by Bourquin in his Brahma Karma (Annales du Musee Guimet. 7, 1885), for which that author used Bengali texts. On the whole the character of the Balinese religious practices appeared to be a highly intricate mixture of Çivaitic-tantristic ceremonial with older forms of Sûrya worship.

A curious difference is, that where in Bourquin's texts Vedic mantras are used (a feature these have in common with the Puranic Sandhya-Vidhis) these are absent in the Balinese Sûrya-Sewana-manuscripts, being replaced either by late tantric ones, or by mantras from Çiwa Pûjâs, or even by archipelago-made strophes.

This circumstance, the author points out, originates in the fact that the above mentioned Indian Puranic texts, specially Agni and Garuda Purana, got their final form in the period from 550–900 A.D. during which great Çivaitic restoration is known to have taken place in Java, specially after 863 A.D., the end of the reign of the Çailendra dynasty.

So it is highly probable that in Java the same spirit prevailed (Çivaitic in contrast with Buddhism that was paramount before) in which the Puranas found their present form in India; hence the striking parallels. It would lead me too far if I went into the details of Dr. Goris' comparison of the texts. I will only quote that in Agni Purana Chap. 21 : 11–15 the unity of Çiwa and Sûrya is expressed, comparable with the most important and most frequently repeated mantra of the whole of the Balinese liturgy, the "Kûṭamantra": Om, hrâm hrîm sah *paramaçiwâdityâya namah.*

Dr. Goris gives a detailed account of the daily ceremonies:— mantras, mudras, asanas and actions, beginning in the bathroom of the priest, where the officiant, preparing himself for the service, says some mantras of quite recent origin, mostly made in Bali itself, and closely connected with the Balinese way of dressing. But it is interesting that during the puja this dress is changed for the cannonic atire of çirowiṣṭa, yajñopawîta, gaṇitri, etc.

[1] In quotations I will follow Dr. Goris' orthography.

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After the performance of a series of ceremonies, the acme of the service is reached when Çiwa descends in the fontanelle of the officiant. The service ends when the God leaves the body, and the priest discards his dress after having sipped some water. All ceremonies are of course accompanied by mantras, in many of which Sanskrit is clearly recognisable, although the centuries have not passed without bringing a great deal of corruption. This is not strange, when the state of some texts is observed, written in this country when the knowledge of Sanskrit was on the decline.

Some of the mantras are of great beauty, and I might quote the "Pangaksama," (in Dr. Goris' enumeration No 5. of the ceremonies) as an example.

"Om kṣamaswa mâm mahâdewa sarwaprânahitângkara,
mâṃ moca sarwa-pâpebhyaḥ pâlayaswa sadâçiwa.
Pâpo'ham pâpakarmâ 'ham pâpâtma pâpasambhawaḥ,
trâhi mâṃ sarwapâpebhyaḥ kenacid mama rakṣatu.
kṣantawyâh kâyikâ dosâh kṣantawyâ wâcikâ mama,
kṣantawyâ mânasâ doṣâḥ tat pramâdaṃ kṣamaswa mâm.

hînâksara(ṃ) hînapâda (ṃ) hînamantran tathaiwa ca
hînabhakti hînawidhi sadâçiwa nama'stu te.
Om, mantrahîna(ṃ) kriyâhina(ṃ) bhaktîhina(ṃ) Maheswara,

Yat pūjitaṃ mayâ dewa paripûrṇam tad astu me.

This prayer for remission has parallels in the indigenous Indian literature, but the exact origin of the quoted passage, like that of countless others, is still unknown.

Would it not throw a light on the history of Indian sects and their wanderings if it were discovered which sects had transferred their holy books to distant Java ?

The Sanskrit of the quoted passage is fairly good. Some other mantras are practically unintelligible and very probably a good deal is mixed up with fabrications of Javanese and Balinese priests.

Some names are applied to things different from what they signify in Sanskrit literature. The Mṛtyuñyaya (or Dhîrgâyur or Saptawṛddhi) in Bali, is *e.g.*, a mantra different from what goes under that name in Lingga Purana (Utt. Bhâga Chap. 53) or Garuda Purana. (Chap. 18).

Although Vedic mantras have disappeared from Balinese liturgy, still we have an exception, found in one codex, where the following passage occurs :

Iti weda-mantra gâyatrî mâtra mâtra (?) ṣaḍakṣara.
sarwadewa pitâ swayambhu
Bhargo dewasya dhîmahi (in the form barga dewo siadi mahi)

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This curious fragment has lived through the ages but this, together with one other, extremely corrupt, mantra from the later Brahmanic period, traced by Professor W. Caland of Utrecht back to the Baudhâyana, Vaikhânasa and Pâraskara Gṛhya Sutra, is all that is left of the Vedic ritual.

This statement of facts is important, as the legend has been spread for years and years, that the priests in Bali had preserved the four Vedas. In an extremely interesting appendix to his work Dr. Goris has definitely stated, that what goes under the name of Veda in Bali is something quite different from the Indian Vedas.

After having given the description of the daily ceremonial, the author dedicates a careful study to the underlying principles to which he hesitatingly applies the name "dogmatics." By this term he denotes "The Javanese version of philosophic religious systems of the Hindus, after these had been transplanted to the archipelago," and he states that the connection between the different types of literary products of Old-Java, like those of the middle ages in the West, is much closer than it is in our "Encyclopedia of Sciences."

On the one hand allegoric works like the "Kunjara-Karna" touch "dogmatics," and the numerous Çâsanas bridge the gulf between law and that subject, on the other hand the vast number of so called "Tuturs"—the richest source of our knowledge of what is styled here as "dogmatics"—contains many elements of general religious interest.

In Java as in India some dogmas appear so closely connected that their separation is as inconceivable for the Javanese as for the Indian theologian. Still the author treats them separately so as to be able to indicate some salient points of their origin, the chief aim being to trace their development on Javanese soil, visible in a series of texts from older to younger times. Amongst the dogmas he singles out:

1st, the Praṇawa.

2nd, the Tripuruṣa (the Indian Trimûrtî) with its close relation to the Praṇawa, to the system of the three canals of the body, to the Triçakti and to the dogma of Utpatti, Sthiti and Lîna. The Tripuruṣa has been of enormous importance to Java and Bali, where in architecture the order: left Visnu, middle Çiwa and right Brahma has been kept, even in the place of the seats of the Gods in the large temple-complex Besakih in Bali, from which the author gives a reproduction on the cover of his book.

3rd, the Pradhâna-Puruṣa-Samyoga, in which he traces not the original notion of the Sâmkhya philosophy, but the later Puranic popular development, widely divergent from the severe system of Sâmkhya. The belief is that Puruṣa is the male and Pradhâna the female principle and that the cosmos originated from their union; or according to another belief, that Putra

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was the result of that union. Their combination, Ardhanareçvarî, is represented also in Old-Javanese sculptural art. This dogma has been also connected with the Trinity in sculpture, where the combination of Ardhanareçvarî with two Gods of the Trimûrtî is found.

4th, the dogma of the Triçakti, by which the Javanese understood the triad : breath, speech and mind. This dogma of remarkably old Indian origin was combined with the Trimârga of the body, in which Iḍâ and Pingalâ have changed places.

5th, the intricate speculations of the "Rwa Bhineda" dealing with the breath on the same principle as mentioned in Hamsa Upanisad 2 and 4, and also brought in connection with the exercise of Prânâyâma.

6th, the daça Bâyu, dealing with the different breaths or winds of the body, on which subject Dr. G. W. J. Drewes has collected some valuable material in his doctors dissertation "Three Javanese Gurus."

7th, the Pañcâkṣara and the Pañcabrahma, the former being the mantra "Namaç Çiwâyâ" dissolved in its syllables, the latter the initials of Çiva's five faces : S (Sadyotjâta), B (Bâmadeva, in Java for Vâmadeva), T (Tatpurusa), A (Aghora) and I (Içâna)—and other closely related matters for which of course there are many parallels in India, of which the author quotes, Garuda—(Chap. 21, 23), Lingga—(Utt. Bh Chap. 14) and Agni Purana. (Chap. 303). South Indian parallels are striking in Part I, Chap. 15 of Ziegenbalg's "Malabarisches Heidenthum" recently edited by Prof. W. Caland (1926).

In closest relation with the previous dogmas stands what the author mentions in the eighth place "Mahapadma ring Sarira" in which the change of name from Brahmarandhra to Çiwadwâra in Java and Bali might again give some indication as to the sect of those who brought this dogma to Java.

9th, follows the dogma of the ṣaṭkoça, ṣaḍrasa, saptarasa and saptasamudra, being an extention of the triçakti in connection with which the author traces the origin of the later manifold meanings of the word "rasa" in Java, back to the passage in the Garbha Upanisad where the seven materials are enumerated, each with its distinct colour and taste, all three meanings being in use for the word "rasa" in the Javanese language, together with the later acquired meaning of semen virile, specially of Çiva, under the influence of rasa=mercury, and also the contamination of rasa with rahasya, a specially Javanese feature. The old Aryan notion has migrated into Moslim mysticism in Java, where the "sagara pitu"—the seven seas—are nothing but these seven materials with their tastes and colours.

10th, the author treats the Daçendriya, Pañcamahâbhûta, and Nawadwâra together.

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11th, the dogma of the Caturpâda, the four sthâna of the human soul, brought into connection with other dogmas, like Praṇawa, Tripuruṣa, etc.

12th, follows an exposition of the Sapta Bhuwana, of which the author gives an account later on, when dealing with some Javanese texts.

In paragraph 13 he briefly treats two groups: the Caturaiçwarya and the triguna. The development of the latter in Java, is remarkable where sat(t)wa has been changed for satya and rajah and tamah have been combined.

I have given the exposition of the author because it is interesting to know which dogmas out of the vast amount of Indian religious nations have taken hold on the Javanese mind.

From this point onward, the whole of Dr. Goris' work is devoted to the development of these Indian ideas on foreign soil. To watch the process of the influence of the people that adopted them on these genuine Indian notions is of fascinating interest, and the data found in the archipelago form a worthy parallel to what is known to have taken place in Tibet, when the ideas of Buddhism took root in the soul of the population.

The study of Hinduism from this point of view has hardly been tackled, and it is a glorious task for scholars of the present and future generations, to widen their outlook in learning how Hinduism developed in contact with other peoples, foreign races, where it maintained itself by its qualities, but still could not remain untouched by the characteristics typical of its new adherents.

From the very beginning the majority of Old Javanese scholars in the West have concentrated their attention on the epic material, perhaps for the reason that the origin of this literature in Java (the Sanskrit epics) remained for a long time the best known part of the overwhelming Indian literature.

Whatever their reason may have been, by their efforts we are now able to form a more or less accurate idea about the course of development these epic fragments in Java, from the time the Old-Javanese Sanskrit scholars wrote their translation under each çloka, up to the present day, when the whole population, Moslim or otherwise, sees in the Heroes of the Mahâbhârata their own glorious Javanese ancestors, makes the virtues of these characters their ultimate aim, and sits for whole nights listening to these tales, staring with absorbtion at the representations of the "wayang" (puppet show) that deal almost without exception[1] with stories originally taken from the epics.

The course of development in epic matters has it close

[1] One great group dealing with an indigenous subject is the cycle in which the hero Pandji is the chief character.

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parallel in architecture, and Dr. Goris clearly proves that religious literature also has followed the same lines,—natural in a civilisation where Hindu settlers became more and more absorbed in the original population, once they were cut off from their native country.

Which was this course? We find that the oldest of the Old-Javanese epic texts that have come down to us are in prose, rather that a Sanskrit strophe in a more or less pure form is followed by an Old-Javanese commentary in prose. The process was fragmentary,—a Sanskrit strophe was quoted more or less as the beginning of a new episode; the Old-Javanese commentary told more than the contents of the special Çloka. The best specimens of this oldest type are the prose parwans of the Mahâbhârata, of which the oldest is dated during the reign of Ananta Wikrama, a king of the East-Javanese dynasty of the Dharmawamsas, in the 10th century A.D. It is the Virâta Parwan dated Çâka 918.

The second stage is richly represented in the "kakawin" versions of the same subject, a free developmnet written in the Old-Javanese language. The oldest specimen we know of this literature is the "Arjuna Wîwâha" composed during the reign of king Erlangga (1010–1042). This literature flourished from that time onward up to 1222 A.D. The "Arjuna Wiwâha," has recently been edited with a Dutch translation by Raden Ngabehi Dr. Poerba Tjaraka, in the "Bydragen tot de Taal-Landen Volkenkunde van Nederlandsch Indie." It is written in Sanskrit metres. So I note the first canto in Çârdûla Vikrîdita, the fourth in Vasanta Tilaka, etc.

The third stage is the recasting of these "Kakawins" in a form which is still more free, probably in the period preceding the downfall of Hindu power in Java,—the 14th and 15th centuries A.D.

Its parallel in architecture is apparent: Firstly we find the temples of middle Java, to which, for example, the famous Barabuder belongs, where the Hindu spirit and ideals appear in structure and plan; secondly the buildings of East Java, where Hindu influence becomes weaker and weaker, and finally the art of the island Bali where Hindu ideals have receded to the background, and the indigenous element has gained more and more in importance.

What makes the fixing of dates in the material Dr. Goris deals with more difficult, is that religious literature here, as everywhere in the world, is archaic in character, so that the criteria of language are difficult to apply, while the work of later copyists may have been responsible for new words even in old texts. The author seeks the criteria for the age of his texts in close comparison with architecture.

The oldest literary form should be a parallel with the Barabudur,—a work written in Sanskrit—not existing, but con-

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ceivable, seeing the vast amount of Sanskrit inscriptions in Java, and the fact that Chinese pilgrims came to the centres of learning on the islands for the purpose of studying Sanskrit texts before they went to India, and remembering that it is proved that for the reliefs on the Barabudur texts like the Lalita Vistara, Jâtakamâla and others were conscientiously followed. Where we find in architecture a balance between the imported and the indigenous elements, we have a parallel in a text like the "Sang Hyang Kamahayânikan" where a Sanskrit original in verse is cited by one strophe at a time and is followed by a detailed translation in Old-Javanese. Sometimes texts of this kind follow the Indian way of division, like the Bhuwanakoça, divided into ten chapters in accordance with the system followed in the Puranas. Gradually here, as in architecture, the form becomes more and more independent of Sanskrit originals. Sometimes a stray Sanskrit strophe is applied, but more like an ornament, without even an attempt at translation. Finally even this disappears in texts like the Amṛta Kundalinî and the Rwa Bhineda. The latest stage appears in the so called "Kalepasan" collections in which a mixture of everything useful for the deliverance (lepas) of the soul is put together. A peep into the author's account of the specimens of these different stages might give many a valuable hint to anyone interested in the subject.

As a specimen of the older character the author gives an account of the above mentioned Bhuwanakoça, a Çivaitic counterpart of the Buddhistic "Sang Hyang Kamahayânikan," and belonging to the tantristic Siddhânta literature. Its plan is very schematic and it bears, like many other Old-Javanese "Tuturs" (Purana-like collections) the name Upadeça, specialised in this case as "Çiwopadeca" with the subtitle "Jñânasiddhânta Çâstram." The division is in ten Paṭalas. After every Sanskrit strophe follows the Old-Javanese translation, and it is noticeable that both are spelt very correctly.

Dr. Goris mentions some Bhuwanakoças in Sanskrit literature, (both chap 108 and chap. 120 of the Agni Purana bear this name) but it appears that he has not been able to trace the exact Sanskrit original. For this reason I will here quote some passages which perhaps might enable some Indian scholar to find the clue to the origin of this special Bhuwanakoça.

The first Çlokas run:

Awighnam astu.

Pranamya çirase dewa, wâkya (m) munir amanmatha
Dewadewa mahâdewa parameçwara-Çankara.

Çûnyaçca nirbânâdhikaççiwânggatwe nirîksate
kutaḥ tadwâkyaṃ madhûlam, crutwâ dewo 'watiṣṭha ca.

swaçarîre mahâyogî paçyate hrdayântarê,
wākyan te parameçânam sûryâyuta-mamaprabham

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hrdiṣṭham sarwabhûtânâm paçyate jalacakrawat
anâdimâ (d) dhyanidhânam çiwânggadhyânam amṛtam.

manas ya darçyate wîra, amî bhûtena cakṣuso
hṛdisthâne lalâtewam murdhântare nirîkṣyate.

Yâtra yâtre samuddhiksyâ kotra kotrewa labhyate.
pâdma kudmala sangsthânam trikoṇasya samîraṇam.

In chapter three a cosmogony is given in the style of the philosophy of the later Upanishads: Akâça to Bâyu, Bâyu to Agni, Agni to Salila (Apas), Salila to Mahî (Prthiwî). In the commentary on the seventh strophe the Dwâdaçatattwa (Tattwa rwa welas) are given in the same way as the later Yoga systems usually give them, except that in the first place Rudra is mentioned instead of Içwara.[1]

In chapter six as well as in chapter nine the form seems to be that Kumâra asks his father for instruction, subsequently given in a dialogue between Bhatâra and Bhatârî.

After having given an account of the Bhuwanakoça, the author treats the Bhuwanasanksepa, a text very similar to the Bhuwanakoça, but without the division into chapters. Also in this work it is Kumâra who, this time with his mother Umâ, asks Bhatâra Içwara for instruction.

I might quote some çlokas for the same reason as before. The fourth and fifth çloka run:

Na bhûmir na jalam wyâpih na tejo na ca mârutah,
na sûrya-candra sarwe'pi, nâkâcam nântaram bhawet.

na ghorah na ca megha tnih (or gih) na râtri na dînan tathâ
na warsan na widyut naiwa atisûkṣma bhawet sada.

Dr. Goris proceeds to give an account of several of the older texts, and in connection with one of them, the "Wrhaspatitattwa," he finds opportunity for a brief research into the question of which sects appear to have been in Java, a matter of great historical and religious importance.

Amongst others he finds the Çaiwa, Pâcupata, and Cambhu, and several difficult to identify, of which I might quote the Mahâpuspita, the Mahâbhiksuka, and the Alepaka.

Much light will be thrown on the matter when the Corpus Inscriptionum Javanicarum will have been published.

Interesting is the development which the author indicates from the preference for the number seven in older texts, like the Saptabhuwana, to the apparent love displayed for the number eight in the much younger Aṣṭalingga, a disposition which can

[1] The order is here: 1. Rudra. 2. Puruṣa. 3. Awyakta. 4. Buddhi. 5. Ahangkara. 6. Pañcatanmâtra. 7. Manah. 8. Akâça. 9. Bâyu. 10. Agni. 11. Apah. 12. Prithiwî.

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already be traced in one codex of the Saptabhuwana, probably a copy of younger origin.

The Aṣṭalingga belongs to the group of younger texts in which the Sanskrit strophes have altogether disappeared, so richly represented among the manuscripts that have come down to the present time.

From this group Dr. Goris also mentions the Amrtakundalinî in which, as the name indicates, rules for breathing are given so as to awaken Kundalinî, strikingly like Indian tantric texts in character.

The author illustrates this feature by giving quotations from A. Avalon's "Principles of Tantra," and further gives a passage from de Kât[s] Angelino's work, illustrating the tantric notions as they now prevail in Bali, a wonderful example of how these doctrines have lived through the ages :

"During man's life, Am,—that is Sûrya—the fire of life, resides in the *nabhi* (or in the belly); a fire burning more glowingly by fever, even to such an extent that the sap of the body sometimes ascends through the fontanelle in the form of drops.

Ah—that is Candra but also bañu (moisture, Skt. apas, rasa)—is under normal circumstances in the Çiwadwâra.

So long as this is the case, the fire (Sûrya, Agni) regularly produces vapour or Bāyu (Sanskrit prâna) under the water, (Candra, Bañu) so long will man remain in good health and have long life (Dîrghâyusa)

If however he should reach deliverance (Kamoksan, Kalepasan) then Am and Ah must change places, and in doing so the fire will be immersed in the water, Am will ally with Ah, but the fire will be extinguished by the water and the water will be evaporated by the fire—there will be nought."

On one hand we find such utterances of purely Indian character, but on the other we come across sayings that are plainly of Malayo-Polynesian origin.

One instance of a curious Aṣṭaka, the so-called "Aṣṭakamulan, occurring in the above mentioned Aṣṭalinga" in which the only trace of Hinduism seems to be the mentioning of Guru-Uma, runs in Dr. Goris' translation as follows :—

1. Grandmother radiating, Grandfather rules the world.
2. Father-mother, Guru-Uma.
3. Grandfather warm, Grandmother cold.
4. Father remembers, Mother has forgotten.
5. Father (is) "Tutur remembered," mother (is) "Tutur forgotten."
6. Uncle clear, aunt obscure.
7. Uncle haze, aunt day.
8. Father sky, mother earth (for which the words (a) kâca and pret (h) iwî are used).

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In his conclusion the author points out, that the whole of the last group-Amṛtakuṇḍalinî, etc., belongs to the late East-Javanese period, and has, on, the one hand, become popular in Bali (e.g. the Amrtakundalinî) and on the other influenced the later Moslim mysticism.

The author then gives two extremely interesting appendices, of which the first deals with the legend of the four Vedas in Bali.

The fact is that the priests in Bali use the word Weda, Caturweda and the verb Mewada. This, of course, lured many investigators into the most fantastic speculations.

The first investigator, John Crawford, stayed some months on the island in the year 1814 and the result of his enquiries was published by him in a book called "History of the Indian Archipelago" and in an article in the "Asiatick Researches" (13.1820). On his data Raffles based his information in the "History of Java," published in 1817. To them nothing was known about Vedas, but between 1840 and 1850 another investigator, R. Friederich, visited the island and heard the word Veda. He went into raptures at the sound, without having been able to see the actual manuscripts, or to hear the texts recited, only getting oral information from the priests who spoke about "Reg Veda," "Jadjoer Veda" "Lama Veda" and "Artawa Veda." One might however have got suspicious on hearing that these texts were said to be written in epic çlokas, he, on the contrary, started an ingenious theory about development in Java and Bali. His statements were the beginning of an endless series of romantic speculations, which survive up to the present day, notwithstanding the endeavours of scholars like van der Tuuk, Kern and others who, after investigations discovered the real character of the collections called Veda in Bali. As Dr. Goris has stated in his book—a statement to which I have referred at the beginning of this article—the only vedic fragment known at present is the corrupt pâda of the Gâyatrî. If the Vedas in Bali are not the Sanskrit Samhitas, what else do they really contain? The truth was discovered in 1870, when Kern with the intuition of genius wrote "What the Balinese mean by Veda, is certainly a compilation of secret mantras (rahasya)."

His suggestion, made without having seen the manuscripts, is quite correct. Dr. Goris gives the contents of one of the ten Balinese Veda-codices now at Leiden, and states that their nature is very much the same as that of the previously treated texts. They contain speculations about holy numbers, diagrams, mystic dissertations, and even a precept for Swacanda Maraṇam (so famous through Bhisma), rendered here, as is usual in Indonesian literature, in the form of a dialogue between Kumâra as a disciple and Bhatâra as his Guru; further a ritualistic manual and suchlike subjects.

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It really would be splendid if this latest effort finally disposed of the beautiful, but deceiving dream, that on that island, far from the country of their birth, the four Vedas had been piously kept and guarded. The truth itself is interesting enough, as we have here once more the opportunity of studying the changes in Hinduism, left to an evolution on foreign soil, totally separated from its source.

In the second appendix the author analyses the structure of two different codices of the Buddhistic counterpart of the Bhuwanakoça,—the Sang Hyang Kamahayanikan—apparently written at widely separated times. He discovers that one of them has kept a great deal of a Sanskrit original, while in the second only a sixth of the whole work corresponds with the first text, the remarkable point being that in all diverging parts Buddhism has given way to Hinduism, with terms like Mahâpurusa, Pañcâtma, Brahmakunda and even the mention of the sage Agastya.

The conclusion Dr. Goris arrives at is that the second manuscript[1] is a recasting of a Buddhistic original, in which subjects that appealed to the Javanese mind have been kept, while matters that were foreign to the mentality of the island have been dropped.

One of the chapters of the first text, that was certain not to appeal, was that about Mahâguhya,—a fragment of great antiquity, in which the name of Dignâga occurs,—containing an equally antique yoga-division, conflicting with the opinions current in Java in later times. The first text might be a survival from the time of the Çailendras (before 863), the second a product of East-Javanese activity.

In giving this review of Dr. Goris' work, I have purposely gone into detail so as to give hints about the many problems that are still to be solved. Whereever the investigator starts his researches, be it in history, religion, architecture, or literature, he finds a field where his labours receive a rich reward,—and in every case a part of his work will lie in India.

Recent discoveries have revealed that the connection between the archipelago and India did not stop with the first influx of Hindus into the islands, but that the contact has been close through many centuries. So Java might throw a light upon developments in India, such as migrations of sects and roads of commerce, but most certainly much that has remained unsolved in Java will be understood only by the aid of a thorough knowledge of Hinduism, such as can be expected only from Indian scholars. The ideal state would be a

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[1] The only one dated and consequently recognisable as having originated in a period subsequent to the second half of the 10th century, the time mentioned at the beginning of this article as the commencement of the great Civaitic restoration.

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co-operation between Dutch, Javanese and Indian scholars, and perhaps the idea of such organised work may not prove an empty dream.

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The Lakṣmaṇa Saṁvat.

By Pramatha Nath Miśra.

The epoch of the Lakṣmaṇa Saṁvat (in abbreviation called La.-Sam.), which was current in Bengal and Mithilā and is still current in the latter country, had been the subject of keen controversy for a long time. Divergent opinions have been expressed by different scholars as to when and by whom the era known as the Lakṣmaṇa Saṁvat was started. Nor has the time of King Lakṣmaṇa Sena of Bengal, from whom the era is supposed to derive its name, been ascertained with sufficient accuracy.

Several dates of the Lakṣmaṇa Saṁvat era have been found in equation with the Śaka and the Vikrama Saṁvat era. One of these is to be found in the copper-plate grant of King Śiva Singha of Mithilā and another in Abu-l Faẓl's Akbarnāma. Unfortunately the epochs of La.-Sam. indicated by these two equations do not agree with each other.

The copper-plate grant of Śiva Singha bears the date "La.-Sam. 293 Śravana vadi 7 Gurau, Śaka 1321, Saṁvat 1455." From this apparently as well as by verification it is found that the Lakṣmaṇa Saṁvat commenced on 1028 Śaka expired or 1107 A.D. In Abu-l Faẓl's Akbarnāma it is stated:—"in the country of Banga (Bengal) dates are calculated from the beginning of the reign of Lakṣmaṇa Sena and that from that period till now there have been 465 years," and it is also stated that at the point of time to which the writer refers, there had elapsed 1,506 years of the Śālibāhana or Śaka era and 1,641 years of the era of Vikramāditya. From this it is obviously found that the era of Lakṣmaṇa Sena commenced on 1506–465, i.e. 1041 Śaka=1119 A.D. Thus two different epochs, one differing from the other by about 12 years, are to be found from these equations.

In those parts of the country known as Mithilā (the Tirhut Division of Behar) La.-Sam. is still used in almanacs and begins on Māgha vadi Pratipada. On examination of about 20 almanacs of Tirhut dating from 1899 to 1919 A.D. I have found that the beginning of the La.-Sam. year falls in January, 1108 A.D. The epoch (i.e. first day of the La.-Sam. year 1 current) is found by calculation to begin on Thursday, 30th January, 1108 A.D.[1] This epoch very nearly coincides with the

[1] Dr. Cunningham in his book on "The Indian Eras" mentions several older almanacs of Tirhut in which La.-Sam. begins, he says from 1105, 1106, and 1109 I had not the opportunity of seeing these almanacs.

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epoch found from the copper-plate grant of King Śiva Singha. There appears to be a difference of one year between these two epochs, if the copper-plate La.-Sam. year be considered as expired.

So it appears that the Mithilā almanacs and the copper-plate grant of Śiva Singha indicate very nearly one epoch of La.-Sam. having the difference of one year between them, while Abu-l Faẓl's statement in Akbarnāma indicates another epoch which can in no way be reconciled with the former. Both of them cannot be true, if the years of Śiva Singha's copper-plate grant and Mithilā almanacs as well as the era mentioned by Abu-l Faẓl be one and the same era.

With a view to settle this controversy and to find out the true epoch of the Lakṣmaṇa Saṁvat, Professor Kielhorn contributed a very learned paper on "The epoch of the Lakṣmaṇa Sena Era" in the "Indian Antiquary"[1] in which he published the results of his verification of six dates of the Lakṣmaṇa Saṁvat found with data for verification and came to the conclusion from these results that the Lakṣmaṇa Sena year was an ordinary southern (Kārtikādi) year with the Amānta scheme of the lunar fortnights and that the first day of the first current year of the era was Kārtika sudi 1 of the expired Śaka year 1041=the 7th October, A.D. 1119. He thus supports the statement of Abu-l Faẓl in Akbarnāma as correct and maintained that "the equation La.-Sam. 293=Śaka 1321 furnished by the copper-plate grant of King Śiva Singha is wrong and that the inscription itself suspicious as it would seem to be also on other grounds, has either been tampered with or is a forgery, got up at a time when the true epoch of the Lakṣmaṇa Sena era has been forgotten, as in my mind it has been forgotten by the almanac-makers of Tirhut." This conclusion, arrived at by Professor Kielhorn, has been accepted by oriental scholars and historians and the controversy with respect to the epoch of the Lakṣmaṇa Saṁvat seems to have come to an end.

While engaged in collecting materials for a history of Mithilā I came across ten more dates of the Lakṣmaṇa Saṁvat, with data for verification, other than those dealt with by Professor Kielhorn. Following his advice to verify and test as many trustworthy dates as are available I have calculated the English equivalent dates of each of these La.-Sam. dates assuming the year to begin on 1026, 1027, 1028, 1029 and 1030 Śaka expired to test the epoch as suggested by the copper-plate grant of King Śiva Singha and Mithilā almanacs as well as the English equivalent dates of these La.-Sam. dates assuming the year to begin on 1040, 1041, and 1042 Śaka expired, to test the epoch as suggested by Abu-l Faẓl's statement and sup-

[1] Vide 'The Indian Antiquary,' Vol. XIX, 1890, p. 1.

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ported by Professor Kielhorn.[1] I have also made calculations of English date equivalents to the date of the copper-plate grant of King Śiva Singha, with all these variations, which Prof. Kielhorn has chosen to omit. I have calculated these dates according to both Amānta and Pūrṇimānta scheme of lunar months where there is possibility of difference owing to these schemes. I have made all these calculations according to the method and tables given in Swell and Dikṣit's famous book "The Indian Calendar." As the times found from these tables for the beginning and end of a tithi are for the longitude of Ujjaini I have corrected them for the longitude of Darbhangā. For the convenience of comparison and some other reasons I have given here the English date equivalent of date No. 1 of Prof. Kielhorn calculated by him.

The results of calculation of all these 12 dates arranged in chronological order are given below.

1. An inscription from a Budha Gaya temple, published in J.A.S.B., (O.S.), Vol. V, 1836, p. 659, is dated thus :—

Śrīmal-Lakṣmaṇa Sena Deva Pādānām atīta rajye-sam 74 Vaiśākha vadi 12 Gurau, i.e. on the 12th of the dark half of Vaisākha of the year 74 since the commencement of the reign, now passed, of the illustrious Lakṣmaṇa Sena Deva, on Thursday.

The corresponding European dates would be :—

(*a*) For 74+1026=Śaka 1100 expired.
Pūrṇimānta, Sunday, 16th April, A.D. 1178.
Amānta Tuesday, 16th May, A.D. 1178.

(*b*) For 74+1027=Śaka 1101 expired.
Pūrṇimānta, *Thursday, 5th April, A.D. 1179*, the 12th tithi of the dark half ended 18h. 28m. after mean sunrise.
Amānta, Sunday, 5th May, A.D. 1179.

(*c*) For 74+1028=Śaka 1102 expired.
Pūrṇimānta, Monday, 24th March, A.D. 1180.
Amānta, Wednesday, 23rd April, A.D. 1180, the 12th tithi or the dark half ended 9 hours 3m. after mean sunrise.

(*d*) For 74+1029=Śaka 1103 expired.
Pūrṇimānta, Sunday, 12th April, A.D. 1181.
Amānta, Tuesday, 12th May, A.D. 1181.

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[1] To test each epoch expressed in Chaitrādi Śaka year, which is the case all along in this paper, it is obviously necessary to make calculation with the assumption of each epoch beginning one year earlier in case the La.-Sam. year in question be current and its date falls between the 1st month of the epoch year and Fālguna, and to make calculation with the assumption of the epoch beginning one year later than the epoch in Śaka expired year in case the La.-Sam. year be expired and its date falling between Chaitra and the last month of the epoch year.

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(*e*) For 74+1030=Śaka 1104 expired;
Pūrṇimānta: Friday, 2nd April, A.D. 1182, the 12th tithi of the dark half ended 1h. 59m. after mean sunrise.
Amānta: Saturday, 1st May, A.D. 1182.

(*f*) For 74+1040=1114 Śaka expired;
Pūrṇimānta: Saturday, 11th April, A.D. 1192.
Amānta: Sunday, 10th May, A.D. 1192.

(*g*) For 74+1041=1115 Śaka expired;
Pūrṇimānta: Wednesday, 31st March, A.D. 1193.
Amānta: Friday, 30th April, 1193 A.D.

(*h*) for 74+1042=1116 Śaka expired;
Pūrṇimānta: Tuesday, 19th April, A.D. 1194.
Amānta: *Thursday, 19th May, A.D. 1194*, the 12th tithi of the dark half of lunar fortnight began 20h. 1m. before and ended 3h. 34m. after mean sunrise.

2. An inscription in the temple of Kamalāditya in the village of Hābi-dih in the District of Durbhangā and published by Mahāmahopādhyāya Murali Dhar Jhā in the preface of "Adbhuta Sāgara" is dated thus:—

अब्दे नेत्र शशांक पक्ष गणिते श्रीलक्ष्मणक्ष्मापते-
र्मासि श्रावण संगके मुनितिथौ स्वात्यां गुरौ शोभने।

i.e. on the era 212 of King Śrī Lakṣmaṇa in the month of Śrāvaṇa, 7th tithi of bright half of Swāti (nakṣatra) on Thursday.

The corresponding European dates would be:—

(*a*) For 212+1026=1238 Śaka expired;
Tuesday, 27th July, 1316 A.D.

(*b*) For 212+1027=1239 Śaka expired;
Saturday, 16th July, 1317 A.D.

(*c*) for 212+1028=1240 Śaka expired;
If the date be in the adhika Śrāvaṇa: Wednesday 5th July, 1318 A.D., the 7th tithi of the bright half began 7h. 28m. before and ended 10h. 11m. after mean sunrise. Hastā nakṣatra began 22h. 20m. before and ended 1h. 39m. after mean sunrise.
If the date be in the nija Śrāvaṇa, Friday, 4th August, 1318 A.D., Hastā nakṣatra.

(*d*) For 212+1029=1341 Śaka expired;
Tuesday, 29th July, 1319 A.D.

(*e*) For 212+1030=1242 Śaka expired;
Sunday, 13th July, 1320 A.D.

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(*f*) For 212+1040=1252 Śaka expired;
Monday, 23rd July, 1330 A.D.

(*g*) For 212+1041=1253 Śaka expired;
Friday, 12th July, 1331 A.D.

(*h*) For 212+1042=1254 Śaka expired;
Thursday, 30th July, 1332 A.D., the 7th tithi of the bright half began 6h. 12m. before and ended 10h. 52m. after mean sunrise. Swāti nakṣatra began 8h. 38m. before and ended 18h. 42m. after mean sunrise.

(*i*) For 212+1043=1255 Śaka expired;
Tuesday, 20th July, 1333 A.D.

3. A copper-plate grant of King Śiva Singha of Mithilā, first published by Mr. G. A. Grierson I.C.S., in "The Indian Antiquary," 1885, p. 151, is dated thus: "La.-Sam. 293 Śrāvaṇa Sudi 7 Gurau Saṁvat 1455, Śaka 1321," i.e. La.-Sam. 292 on Śrāvaṇa, 7th tithi of bright half which was Thursday, Saṁvat 1455, Śaka 1321.

The corresponding European dates would be:—

(*a*) For 293+1026=1319 Śaka expired;
Tuesday, 31st July, 1397 A.D.

(*b*) For 293+1027=1320 Śaka expired;
Saturday, 20th July, 1398 A.D.

(*c*) For 293+1028=1321 Śaka expired;
Thursday, 10th July, 1399 A.D., the 7th tithi of the bright half began 8h. 54m. before and ended 15h. 41m. after mean sunrise, and when there was southern Vikrama Saṁvat 1455.

(*d*) For 293+1029=1322 Śaka expired;
Wednesday, 29th July, 1400 A.D., the 7th tithi of the bright half began 15h. 55m. before and ended 7h. 41m. after mean sunrise.

(*e*) For 293+1030=1323 Śaka expired;
Sunday, 17th July, 1401 A.D.

(*f*) For 293+1040=1333 Śaka expired;
Tuesday, 28th July, 1411 A.D.

(*g*) For 293+1041=1334 Śaka expired;
Saturday, 16th July, 1412 A.D.

(*h*) For 293+1042=1335 Śaka expired;
Friday, 4th August, 1413 A.D., the 7th tithi of the bright half began 15h. 16m. before and ended 8h. 19m. after mean sunrise.

4. In a verse ascribed to Vidyapati and noticed by Ray Monomohan Chakraverty Bahadur (in J.P.A.S.B., (N.S.),

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Vol. XI, p. 418) and others, the death of King Deva Singha of Mithilā is dated thus:—

अनलरंध्रकर लक्काण नरवर्ह सकससुद् कर अगिनि ससी ।
चतकारि छटि जेटा मिलिओ वार वेहप्पर्हजाउलसी ॥

i.e., on the year 293 of King Lakkan Saka 1324 in the 6th tithi of dark half of Chaitra, Jaisthā nakṣatra which was on a Thursday.

The corresponding European dates would be:—

(*a*) For 293+1027=1320 Śaka expired;
Amānta: Monday, 8th April, 1398 A.D.
Pūrṇimānta: Wednesday, 26th February, 1399 A.D. Swāti nakṣatra.

(*b*) For 293+1028=1321 Śaka expired;
Amānta: *Thursday, 27th March, 1399 A.D.*, the 6th tithi of the dark half began 7h. 24m after mean sunrise and ended 8h. 32m. after mean sunrise of the following day: Jayesthā nakṣatra ended 9h. 19m. after mean sunrise of 27th March, 1399 A.D.
Pūrṇimānta: Saturday, 14th February, 1400 A.D.

(*c*) For 293+1029=1322 Śaka expired;
Amānta: Tuesday, 16th March, 1400 A.D., if the date falls in Adhika-Chaitra; *15th April, Thursday, 1400 A.D.*, if the date falls in nija-Chaitra; the 6th tithi of the dark half began 20h. 32m. before and ended 3h. after mean sunrise; Uttarasārhā nakṣatra.
Pūrṇimānta: Sunday, 6th March, 1401 A.D.

(*d*) For 293+1030=1323 Śaka expired;
Amānta: Monday, 4th April, 1401 A.D.
Pūrṇimānta: Thursday, 23rd February, 1402 A.D., the 6th tithi of the dark half began 4h. 40m. before and ended 19h. 14m. after mean sunrise; Visākhā nakṣatra ended 4h. 16m. after mean sunrise.

(*e*) For 293+1031=1324 Śaka expired;
Amānta: Saturday, 25th March, 1402 A.D.
Pūrṇimānta: Tuesday, 13th February, 1403 A.D.

(*f*) For 293+1040=1333 Śaka expired;
Amānta: Tuesday, 14th April, 1411 A.D.
Pūrṇimānta: Friday, 4th March, 1412 A.D.; the 6th tithi of the dark half began 4h. 13m. before and ended 19h. 22m. after mean sunrise.

(*g*) For 293+1041=1334 Śaka expired;
Amānta: Sunday, 3rd April, 1412 A.D.

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Pūrṇimānta: Wednesday, 22nd February, 1413 A.D.; the 6th tithi of the dark half began 16h. 41m. before and ended 6h. 54m. after mean sunrise.

(*h*) For 293 + 1042 = 1335 Śaka expired;
Amānta: *Thursday, 23rd March, 1413 A.D.*; the 6th tithi of the dark half began 4h. 18m. after and ended 19h. 18m. after mean sunrise. Jayesthā nakṣatra began 20h. 47m. before and ended 2h. 14m. after mean sunrise.
Pūrṇimānta: Monday, 12th March, 1414 A.D.

5. According to Mahāmahopādhyāya Hara Prashad Shastri a copy of "Ekāgni-dāna-padhati" noticed in "Nepal MSS. notices," Vol. I, p. 129, is dated thus:—

"लसं २९९ पौष सुदि ९ चन्द्रे"

i.e., the book was copied on Monday, the 9th tithi of the bright half (lunar fortnight) of Pauṣa in La.-Sam. 299.

The corresponding European dates would be:—

(*a*) For 299 + 1026 = 1325 Śaka expired;
Saturday, 22nd December, 1403 A.D.

(*b*) For 299 + 1027 = 1326 Śaka expired;
Thursday, 11th December, 1404 A.D.

(*c*) For 299 + 1028 = 1327 Śaka expired;
Wednesday, 30th December, 1405 A.D.

(*d*) For 299 + 1029 = 1328 Śaka expired;
Sunday, 19th December, 1406 A.D.; the 9th tithi of the bright half began 54m. before and ended 22h. 13m. after mean sunrise.
Repetition of the same Tithi on the next day, i.e. on Monday, is possible.

(*e*) For 299 + 1030 = 1329 Śaka expired;
Friday, 9th December, 1407 A.D.

(*f*) For 299 + 1040 = 1339 Śaka expired;
Friday, 17th December, 1417 A.D.

(*g*) For 299 + 1041 = 1340 Śaka expired;
Thursday, 5th January, 1419 A.D.

(*h*) For 299 + 1042 = 1341 Śaka expired;
Monday, 25th December, 1419 A.D.; the 9th tithi of the bright half began 6h. 21m. before and ended 17h. 15m. after mean sunrise.

6. According to Rai Monomohan Chakraburty Bahadur (in J.P.A.S.B., (N.S.), Vol. XI, p. 392) a MS. of the Bhāgavata Purāna copied by Vidyapati himself is dated "La.-Sam. 309

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Śrāvaṇa, Sudi 15 Kuje," i.e. on Tuesday, the 15th tithi of the bright half of Śrāvaṇa in La.-Sam. 309.

The corresponding European dates would be :—

(*a*) For 309 + 1026 = 1335 Śaka expired ;
Saturday, 12th August, 1413 A.D.

(*b*) For 309 + 1027 = 1336 Śaka expired ;
Wednesday, 1st August, 1414 A.D. ; the 15th tithi of the bright half began 8h. 58m. before and ended 14h. 42m. after mean sunrise.

(*c*) For 309 + 1028 = 1337 Śaka expired ;
Sunday, 21st July, 1415 A.D.

(*d*) For 309 + 1029 = 1338 Śaka expired ;
Saturday, 8th August, 1416 A.D.

(*e*) For 309 + 1030 = 1339 Śaka expired ;
Wednesday, 28th July, 1417 A.D. ; the 15th tithi of the bright half began 7h. 3m. before and ended 16h. 32m. after mean sunrise.

(*f*) For 309 + 1040 = 1349 Śaka expired ;
Thursday, 7th August, 1427 A.D.

(*g*) For 309 + 1041 = 1350 Śaka expired ;
Monday, 26th July, 1428 A.D. ; the 15th tithi of the bright half began 8h. 3m. before and ended 15h. 33m. after mean sunrise.

(*h*) For 309 + 1042 = 1351 Śaka expired ;
Saturday, 16th July, 1429 A.D.

7. A MSS. of Srinivasa's Setudarpani, found by Mahāmahopādhyāya Hara Prashad Shastri is dated thus (J.P.A.S.B., (N.S.), Vol. XI, p. 426) :—

"परमभट्टारकेत्यादि महाराजाधिराज श्रीमल्लक्ष्मणसेन देवीयैकविंशत्यधिक शतत्रयतमाब्दे कार्त्तिकामास्यायां शनौ + + + तीरभूक्तौ + + + + लिखितमिदं सेतुदर्पणीपुस्तकमिति ॥"

i.e., the book Setudarpani was written in * * Tīrabhuki * * * on Saturday, new moon in the month of Kārtika of the year 321 of Mahārājādhirāj Śrīmallakṣmaṇa Sena deva.

The corresponding European dates would be :—

(*a*) For 321 + 1026 = 1347 Śaka expired ;
Amānta : *Saturday, 10th November, 1425 A.D.*; the 15th tithi of the dark half began 15h. before and ended 8h. 45m. after mean sunrise.
Pūrṇimānta : Thursday, 11th October, 1425 A.D.

(*b*) For 321 + 1027 = 1348 Śaka expired ;
Amānta : Wednesday, 30th October, 1426 A.D.
Pūrṇimānta : Tuesday, 1st October, 1426 A.D.

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(*c*) For 321 + 1028 = 1349 Śaka expired ;
Amānta : Tuesday, 18th November, 1427 A.D.
Pūrṇimānta : Monday, 20th October, 1427 A.D.

(*d*) For 321 + 1029 = 1350 Śaka expired ;
Amānta : Sunday, 7th November, 1428 A.D ; the Amāvasyā began 10h. 49m. before and ended 11h. 18m. after mean sunrise.
Pūrṇimānta : *Saturday, 9th October, 1428 A.D.* ; the Amāvasyā began 21h. 2m. before and ended 1h. 6m. after mean sunrise.

(*e*) For 321 + 1030 = 1351 Śaka expired ;
Amānta : *Saturday, 26th November, 1429 A.D.* ; the Amāvasyā began 16h. 3m. before and ended 7h. 32m. after mean sunrise.
Pūrṇimānta : Friday, 28th October, 1429 A.D.

(*f*) For 321 + 1040 = 1361 Śaka expired ;
Amānta : Friday, 6th November, 1439 A.D. ; the Amāvasyā began 5h. 38m. before and ended 17h. 57m. after mean sunrise.
Pūrṇimānta : Thursday, 8th October, 1439 A.D.

(*g*) For 321 + 1041 = 1362 Śaka expired ;
Amānta : Thursday, 24th November, 1440 A.D.
Pūrṇimānta : Wednesday, 26th October, 1440 A.D.

(*h*) For 321 + 1042 = 1363 Śaka expired ;
Amānta : Monday, 13th November, 1441 A.D.
Pūrṇimānta : Sunday, 15th October, 1441 A.D. ; the Amāvasyā began 23h. 9m. before and ended 1h. 35m. after mean sunrise.

8. According to Mahāmahopādhyāya Parameswar Jhā a MS. of Visnu Purāna written by Pakṣadhara Miśra and found in the house of Keśab Jhā of Jogiara,[1] in the District of Durbhangā is dated thus :—

वाणैर्वेदयुतैः सशम्भुनयनैः संख्यां गते ह्यायने
श्रीमद्गौड़महीभुजो गुरुदिने मार्गे च पक्षे सिते ।
षष्ठ्यान्तामरावतिमधिवसन् या भूमिदेवालया
श्रीमत्पक्षधरः सुपुस्तकमिदं शुद्धं व्यलेखीद्द्रुतम् ॥

i.e., the book was written correctly and swiftly by Pakṣadhara, residing at Amarābati, on Thursday, the 6th tithi of bright half of the month of Agrahāyana on the past year 345 of the king of Gour.

The corresponding European dates would be :—

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[1] "Mithila Mihir," 31st May, 1913.

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(*a*) For 345 + 1026 = 1371 Śaka expired;
Friday, 21st November, 1449 A.D., when the 6th tithi of the bright half began 8h. 20m. before and ended 15h. 16m. after mean sunrise.

(*b*) For 345 + 1027 = 1372 Śaka expired;
Tuesday, 10th November, 1450 A.D., when the 6th tithi of the bright half began 3m. before and ended 24h. 29m. after mean sunrise, i.e. after 29m. after mean sunrise of the following Wednesday, hence there was repetition of the tithi.

(*c*) For 345 + 1028 = 1373 Śaka expired;
Monday, 29th November, 1451 A.D.

(*d*) For 345 + 1029 = 1374 Śaka expired;
Friday, 17th November, 1452 A.D., when the 6th tithi of the bright half began 5h. before and ended 18h. 35m. after mean sunrise.

(*e*) For 345 + 1030 = 1375 Śaka expired;
Tuesday, 6th November, 1453 A.D.

(*f*) For 345 + 1040 = 1385 Śaka expired;
Wednesday, 16th November, 1463 A.D.; when the 6th tithi of the bright half began 7h. 29m. before and ended 16h. 7m. after mean sunrise.

(*g*) For 345 + 1041 = 1386 Śaka expired;
Monday, 5th November, 1464 A.D.

(*h*) For 345 + 1042 = 1387 Śaka expired;
Sunday, 24th November, 1465 A.D.

(*i*) For 345 + 1043 = 1388 Śaka expired;
Thursday, 13th November, 1466 A.D.; when the 6th tithi of the bright half began 9h. 49m. before and ended 13h. 46m. after mean sunrise.

9. According to Mahāmahopādhyāya H. P. Shastri, in his "Notices on Nepal MSS.," Vol. I, p. 65, a copy of Bhojadeva's "Vibada Vidyā Vichāra Chatura" is dated thus:—

"समस्तेत्यादि महाराजाधिराज-वरकुमार-श्रीमद्गदाधर-देवपादानामाज्ञया श्रीशुभपतिर्भिर्लिखितमिदं पुस्तकमिति। लसं ३७२। श्रावण वदि १ शुक्रे श्रीरत्नधरनगरे।"

i.e., this book is written at the command of Mahārājadhirāja Kumāra Śrīmad Gadādhara Deva by Śrī Subhapati La.-Sam. 372 in the first tithi of dark half (of lunar fortnight) of Srāvaṇa which was on Friday.

The corresponding European dates would be:—

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(*a*) For 372+1026=1398 Śaka expired;
Pūrṇimānta: Monday, 8th July, 1476 A.D.
Amānta: Wednesday, 6th August, 1476 A.D.

(*b*) For 372+1027=1399 Śaka expired;
Pūrṇimānta: *Friday, 27th June, 1477 A.D.;* the first tithi of the dark half began 13h. 43m. before and ended 9h. 53m. after mean sunrise.
Amānta: Sunday, 27th July, 1477 A.D.

(*c*) For 372+1028=1400 Śaka expired;
Pūrṇimānta: Thursday, 16th July, 1478 A.D.; the first tithi of the dark half began 20h. 31m. before and ended 3h. 5m. after mean sunrise.
Amānta: *Friday, 14th August, 1478 A.D.;* the first tithi of the dark half began 6h. 59m. before and ended 16h. 36m. after mean sunrise.

(*d*) For 272+1029=1401 Śaka expired;
Pūrṇimānta: Monday, 5th July, 1479 A.D.
Amānta: Tuesday, 3rd August, 1479 A.D.

(*e*) For 372+1030=1402 Śaka expired;
Pūrṇimānta: *Friday, 23rd June, 1480 A.D.*, the 1st tithi of the dark half began 15h. 42m. before and ended 7h. 54m. after mean sunrise.
Amānta: Sunday, 23rd July, 1480 A.D.

(*f*) For 372+1040=1412 Śaka expired;
Pūrṇimānta: Saturday 3rd July, 1490 A.D.
Amānta: Sunday, 1st August, 1490 A.D.

(*g*) For 372+1041=1413 Śaka expired;
Pūrṇimānta: Wednesday, 22nd June, 1491 A.D., the first tithi of the dark half began 2h. 57m. before and ended 20h. 43m. after mean sunrise.
Amānta: *Friday, 22nd July, 1491 A.D.*, the first tithi of the dark half began 20h. 53m. before and ended 2h. 43m. after mean sunrise.

(*h*) For 372+1042=1414 Śaka expired;
Pūrṇimānta: Tuesday, 10th July, 1492 A.D.
Amānta: Thursday, 9th August, 1492 A.D., the 1st tithi of the dark half began 21h. 6m. before and ended 2h. 31m. after mean sunrise.

10. According to Rai Manamohan Chakraburty Bahadur (in J.P.A.S.B., (N.S.), Vol. XI, 1916, p. 430) an India Government MSS. No. 4026 of 'Dānakānda' of the 'Kritya Kalpataru' is dated thus:—

"लसं ३७४ कार्त्तिकसुदि ५ बुधे + + + शाके १४१६ ॥"

i.e. La.-Sam. 374. The fifth tithi of the bright half of Kārtika which was on a Wednesday, Śaka 1416.

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The corresponding European dates would be :—

(*a*) For 374 + 1026 = 1400 Śaka expired ;
Saturday, 31st October, 1478 A.D.

(*b*) For 374 + 1027 = 1401 Śaka expired ;
Wednesday, 20th October, 1479 A.D., the fifth tithi of the bright half began 15h. 21m. before and ended 3h. 26m. after mean sunrise.

(*c*) For 374 + 1028 = 1402 Śaka expired ;
Sunday, 8th October, 1480 A.D.

(*d*) For 374 + 1029 = 1403 Śaka expired ;
Saturday, 27th October, 1481 A.D.

(*e*) For 374 + 1030 = 1404 Śaka expired ;
Thursday, 17th October, 1482 A.D., the 5th tithi of the bright half, began 14h. 38m. before and ended 9h. 2m. after mean sunrise.

(*f*) For 374 + 1040 = 1414 Śaka expired ;
Friday, 26th October, 1492 A.D.

(*g*) For 374 + 1041 = 1415 Śaka expired ;
Tuesday, 15th October, 1493 A.D., the 5th tithi of the bright half began 6h. 4m. before and ended 17h. 36m. after mean sunrise.

(*h*) For 374 + 1042 = 1416 Śaka expired ;
Monday, 3rd November, 1494 A.D.

11. According to Rai Manamohan Chakraburty Bahadur (in J.P.A.S.B., (N.S.), Vol XI, 1916. p. 382) an India Government MSS. No. 3604 of 'Kritya-ratnākara' containing 160 folios of corypha leaves bears the date of its copying thus :—

"लसं ३९२ प्रथम वैशाख वदि ९ शुक्रे।"

i.e. copied on Friday the 9th tithi of the dark half (of lunar fortnight) of Vaiśakha in La.-Sam. 392.

The corresponding European dates would be :—

(*a*) For 392 + 1026 = 1418 Śaka expired ;
Pūrṇimānta : Thursday, 7th April, 1496 A.D. ; the 9th tithi of the dark half began 13h 13m. before and ended 10h. 5m. after mean sunrise.
Amānta : Saturday, 7th May, 1496 A.D.

(*b*) For 392 + 1027 = 1419 Śaka expired ;
Pūrṇimānta : Monday, 27th March, 1497 A.D.
Amānta : Wednesday, 26th April, 1497 A.D.

(*c*) For 392 + 1028 = 1420 Śaka expired ;
Pūrṇimānta : Sunday, 15th April, 1498 A.D.
Amānta : Monday, 14th May, 1498. A.D.

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(*d*) For 392 + 1029 = 1421 Śaka expired;
Pūrṇimānta: Thursday, 4th April, 1499 A.D., the 9th tithi of the dark half began 11h. 5m. before and ended 12h. 21m. after mean sunrise.
Amānta: *Friday, 3rd May, 1499 A.D.*, the 9th tithi of the dark half began 11m. before and ended 23h. 34m. after mean sunrise.

(*e*) For 392 + 1030 = 1422 Śaka expired;
Pūrṇimānta: Tuesday, 20th March, 1500 A.D.
Amānta: Wednesday, 22nd April, 1500 A.D.

(*f*) For 392 + 1040 = 1432 Śaka expired;
Pūrṇimānta: Wednesday, 3rd April, 1510 A.D.
Amānta: Thursday, 2nd May, 1510 A.D., the 9th tithi of the dark half began 12h. 21m. before and ended 11h. 13m. after mean sunrise.

(*g*) For 392 + 1041 = 1433 Śaka expired;
Pūrṇimānta: Sunday, 23rd March, 1511 A.D.
Amānta: Wednesday, 21st May, 1511 A.D., if the date be in nija Vaiśakha; Tuesday, 22nd April, 1511 A.D., if the date be in adhika Vaiśakha.

(*h*) For 392 + 1042 = 1434 Śaka expired;
Pūrṇimānta: Wednesday, 10th April, 1512 A.D.
Amānta: Monday, 10th May, 1512 A.D.

12. According to Mahāmahopādhyāya H. P. Shastri in "Notices on Nepal MSS.," Vol. I, p. 63, a MS. of Devi Mahātmaṁ is dated thus:—

"लसं ३९२ पौष वदि ३ बुधे।"

i.e. on Wednesday, the 3rd Tithi of the dark half of Pousa La.-Sam. 392.

The corresponding European dates would be:—

(*a*) For 392 + 1026 = 1418 Śaka expired;
Pūrṇimānta: *Wednesday, 23rd November*, 1496 A.D., the 3rd tithi of the dark half began 7h. 35m. before and ended 14h. 16m. after mean sunrise.
Amānta: Friday, 23rd December, 1496 A.D.

(*b*) 392 + 1027 = 1419 Śaka expired;
Pūrṇimānta: Tuesday, 12th December, *1497 A.D.*, the 3rd tithi of dark half began 7h. 37m. before and ended 16h. 2m. after mean sunrise.
Amānta: Thursday, 11th January, 1498 A.D., the 3rd tithi of the dark half began 28m. before and ended 21h. 44m. after mean sunrise.

(*c*) For 392 + 1028 = 1420 Śaka expired;
Pūrṇimānta: Sunday, 2nd December, 1498 A.D.
Amānta: Monday, 31st December, 1498 A.D.

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(*d*) For 392 + 1029 = 1421 Śaka expired ;
Pūrṇimānta : *Wednesday, 28th November, 1499 A.D.*, the 3rd tithi of the dark half began 3h. 31m. before and ended 20h 5m. after mean sunrise.
Amānta : Friday, 20th December, 1499 A.D.

(*e*) For 392 + 1030 = 1422 Śaka expired ;
Pūrṇimānta : Tuesday, 8th December, 1500 A.D., the 3rd tithi of the dark half began 2h. 19m. before and ended 21h. 17m. after mean sunrise.
Amānta : Thursday, 7th January, 1501 A.D., the 3rd tithi of the dark half began 5h-17m. before and ended 18h. 18m. after mean sunrise.

(*f*) For 392 + 1040 = 1432 Śaka expired ;
Pūrṇimānta : Friday, 17th November, 1510 A.D.
Amānta : *Wednesday, 18th December, 1510 A.D.*, the 3rd tithi of the dark half began 11h. 32m. before and ended 11h. 43m. after mean sunrise.

(*g*) For 392 + 1041 = 1433 Śaka expired ;
Pūrṇimānta : Sunday, 7th December, 1511 A.D.
Amānta : Tuesday, 6th January, 1512 A.D., the 3rd tithi of the dark half began 15h. 21m. before and ended 8h. 15m. after mean sunrise.

(*h*) For 392 + 1042 = 1434 Śaka expired ;
Pūrṇimānta : Friday, 26th November, 1512 A.D.
Amānta : Sunday, 26th December, 1512 A.D.

On examination of the above results it will be found that the dates 1, 2, 4, 9 and 12 work out satisfactorily according to Prof. Kielhorn's proposed epoch of the Lakṣmaṇa Saṁvat era (i.e. Kartika sudi 1 of Śaka 1041 expired) thus :—

(*a*) Date 1 : 'The year 74, Vaisākha-vadi 12 Gurau.' The year is an expired year and with Amānta scheme of the lunar fortnights, the corresponding European date (for 74 + 1042 = 1116 Śaka expired) is Thursday, 19th May, 1194 A.D., when the 12th tithi of the dark half began 20h. 1m. before and ended 3h. 34m. after mean sunrise.

(*b*) Date 2 : 'The year 212 Śrāvana, 7th tithi, Gurau, Swāti nakṣatra.' The year is an expired year with Amānta scheme of the lunar fortnights, the corresponding (for 212 + 1042 = 1254 Śaka expired) European date is Thursday, 30th July, 1332 A.D., when the 7th tithi of the bright half began 6h. 12m. before and ended 10h. 52m. after mean sunrise and Swāti nakṣatra began 5h. 38m. before and ended 18h. 42m. after mean sunrise.

(*c*) Date 4 : The year 293 Chaitra Kriśnā 6th, Thursday. The year is an expired year with Amānta scheme of the lunar fortnights. The corresponding European date (for 293 + 1042 = 1335 Śaka expired) is Thursday, 23rd March, 1413 A.D., when the 6th tithi of the dark half began 4h. 18m. before and

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ended 19h. 18m. after mean sunrise and Jayesthā nakṣatra began 20h. 47m. before and ended 2h. 14m. after mean sunrise.

(*d*) Date 9: 'The year 372, Śrāvana vadi 1, Gurau.' The year is a current year with Amānta scheme of the lunar fortnights and the corresponding European date (for 372 + 1041 = 1413 Śaka expired) is Friday, 22nd July, 1491 A.D., when the 1st tithi of the dark half began 20h. 53m. before and ended 2h. 33m. after mean sunrise.

(*e*) Date 12: 'The year 392 Pousa vadi 3 Budhe.' The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 392 + 1040 = 1452 Śaka expired) is Wednesday, 18th December, 1510 A.D., when the 3rd tithi of the dark half began 11h. 32m. before and ended 11h. 43m. after mean sunrise.

But the dates 3, 5, 6, 7, 8, 10, and 11 do not work out satisfactorily with Prof. Kielhorn's scheme of the epoch of the Lakṣmaṇa Śena era, either the years be current or expired or with Amānta or Pūrṇimānta scheme of the lunar fortnights. It is needless to add that all other five dates of Prof. Kielhorn (his 1st date being the 1st date in this paper too) work out satisfactorily according to this scheme.[1]

If we examine the above dates in the light of the alternative assumption of Prof. Kielhorn that the Lakṣmaṇa Sena era commenced on the Mrigaśira sudi 1 of Śaka 1028 expired = 29th October, 1106 A.D., we find that only the dates 3, 7, 9 and 11 work out satisfactorily in the following ways:—

(*a*) Date 3: 'The year 293 Śrāvana suklā saptami Gurau.' The year is current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 293 + 1028 = 1321 Śaka expired) would be Thursday, 10th July, 1399 A.D., when the 7th tithi of the bright half began 8h. 54m. before and ended 15h. 41m after mean sunrise.

(*b*) Date 7: 'The year 321 Kartika Amāvasyā Śani.' The year is an expired year with Pūrṇimānta scheme of the lunar fortnights. The corresponding European date (for 321 + 1029 = 1350 Śaka expired) would be Saturday, 9th October, 1428 A.D., when the new moon began 21h. 2m. before and ended 1h. 6m. after mean sunrise.

(*c*) Date 9: 'The year 372 Śrāvana vadi 1 Śukre.' The year is a current one with Amānta scheme of the lunar fortnights. The corresponding European date (for 372 + 1028 = 1400 Śaka expired) is Friday, 14th August, 1478 A.D.; when the 1st tithi of the dark half began 6h. 59m. before and ended 16h. 36m. after mean sunrise.

(*d*) Date 11: 'The year 392 Vaiśakha vadi 9 Śukre.' The year is an expired year with Amānta scheme of the lunar fortnights. The corresponding European date (for 392 + 1029 =

[1] Vide "The Indian Antiquary," Vol. XIX (1890), p. 1.

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1421 Śaka expired) is Thursday, 4th April, 1499 A.D.; the 9th tithi of the dark half began 11h. 5m. before and ended 12h. 21m. after mean sunrise.

But the dates 1, 2, 4, 5, 6, 8, 10 and 12 do not work out satisfactorily according to this scheme. While five dates of Prof. Kielhorn (i.e. dates 2, 3, 4, 5, 6) work out satisfactorily according to this scheme.[1]

On examination of the dates in the light of the epoch as indicated by the Mithilā almanacs only (i.e., Māgha vadi 1 Śaka 1029 expired, 30th January, 1108 A.D.), we find that eight dates (dates 2, 4, 6 of Prof. Kielhorn and dates 4, 7, 9, 11, 12 of this paper) work out satisfactorily in the following ways:—

Dates of Prof. Kielhorn.

(*a*) Date 2: "The year 317 Chaitra sudi Partipada Gurau dine." The year is a current year. The corresponding European date is (for 317 + 1029 = 1346 Śaka expired) Thursday, 2nd March, 1424 A.D.; when the first tithi of the bright half ended 4h. 2m. after mean sunrise.

(*b*) Date 4: "The year 399 Vaisākha Kriṣnā Chaturthyām Chandre." The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 399 + 1029 = 1428 Śaka expired) is Monday, 11th May, 1506 A.D., when the 4th tithi of the dark half ended 5h. 19m. after mean sunrise.

(*c*) Date 6: "The year 433 Kārtika Kriṣnā Saptamyām Śukre." The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 433 + 1029 = 1462 Śaka expired) is Friday, 22nd October, 1540 A.D., when the 7th tithi of the dark half ended 4h. 13m. after mean sunrise.

Dates of this paper.

(*d*) Date 4: "The year 293, Chaitra Krishnā Ṣaṣthī Thursday; Jayesthā nakṣatra." The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 293 + 1028 = 1321 Śaka expired) is Thursday, 27th March, 1399 A.D., when the 6th tithi of the dark half began 7h. 24m. after mean sunrise and Jaysthā nakṣatra ended 9h. 19m. after mean sunrise.

(*e*) Date 7: "The year 321 Kartika Amāvasyā Śani." The year is an expired year with Amānta scheme of the lunar fortnights. The corresponding European date (for 321 + 1030 = 1351 Śaka expired) is Saturday, 26th November, 1429 A.D., when the new moon began 16h. 3m. before and ended 7h. 32m. after mean sunrise.

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[1] Vide "The Indian Antiquary," Vol. XIX (1890), p. 1.

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(*f*) Date 9: 'The year 372 Śrāvana vadi 1 Śukre.' The year is an expired year with Pūrṇimānta scheme of the lunar fortnights. The corresponding European date (for 372+1030 = 1402 Śaka expired) is Friday, 23rd June, 1480 A.D., when the 1st tithi of the dark half began 15h. 42m. before and ended 7h. 54m. after mean sunrise.

(*g*) Date 11: 'The year 392 Vaiśakha vadi 9 Śukre.' The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 392+1029= 1421 Śaka expired) is Friday, 3rd May, 1499 A.D., when the 9th tithi of the dark half began 11m. before and ended 23h. 34m. after mean sunrise.

(*h*) Date 12: 'The year 392 Pousa vadi 3 Budhe.' The year is an expired year with Pūrṇimānta scheme of the lunar fortnights. The corresponding European date (for 392+1029 = 1421 Śaka expired) is Wednesday, 20th November, 1499 A.D., when the 3rd tithi of the dark half began 3h. 3m. before and ended 20h. 5m. after mean sunrise.

Of the other eight dates which do not work out satisfactorily with the epoch of the Mithilā almanacs three dates (dates 6, 8, and 10) do not work out satisfactorily either with Prof. Kielhorn's or Śiva Singha's Copper-plate epoch. These three dates work out for three different epochs.

It has been said before that in the part of the country known as Mithilā in ancient time the Lakṣmana saṁvat is still current and is to be found in the almanacs used there. But from these almanacs we find that the Lakṣmana saṁvat year began from Māgha Krishnā Pratipada 1029 Śaka expired.

Now on examination of the dates with the assumption that the Lakṣmana saṁvat began on Māgha Kriṣnā Pratipada of 1028 Śaka expired, i.e. taking the year of beginning as indicated by the copper-plate grant of Śiva Singha and beginning of it as indicated by Mithilā almanacs we find that the dates 3, 4, 5, 7, 9, 11, and 12 work out satisfactorily in the following ways:—

(*a*) Date 3: 'The year 293 Śrāvana Śuklā 7 Thursday.' The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 293+1028= 1321 Śaka expired) is Thursday, 10th July, 1399 A.D., when the 7th tithi of the bright fortnight began 8h. 54m. before and ended 15h. 41m. after mean sunrise.

(*b*) Date 4: 'The year 293 Chaitra Kriṣnā 6, Thursday Jayesthā nakṣatra.' The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 293+1028=1321 Śaka expired) is Thursday, 27th March, 1399 A.D., when the 6th tithi of the dark half began 7h. 24m. after mean sunrise of the following day. Jaisthā nakṣatra ended 9h. 19m. after mean sunrise of 27th March.

(*c*) Date 5: 'The year 299 Pousa sudi 9 Chandre.' The

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year is an expired year. The corresponding European date (for 299+1029=1328 Śaka expired) is Monday, 20th December, 1406 A.D.; when the 9th tithi of the bright half by repetition of tithi is possible.[1]

(*d*) Date 7: 'The year 321 Kartika Amāvasyā Śani.' The year is an expired year with Pūrṇimānta scheme of the lunar fortnights. The corresponding European date (for 321+1029=1350 Śaka expired) is Saturday, 9th October, 1428 A.D.; when the new moon began 21h. 2m. before and ended 1h. 6m. after mean sunrise.

This date also work out satisfactorily with Amānta scheme of the lunar fortnights in the following way: On Saturday, 6th November, 1428 A.D., the new moon of Kārtika having began about 13h. after mean sunrise, the date has been so described as there was Amāvasya for almost the whole night of that date although there was no Amāvasya at the mean sunrise on that date.

(*e*) Date 9: 'The year 372 Śrāvana vadi 1 Śukre.' The year is a current year with Amānta scheme of the lunar fortnights. The corresponding European date (for 372+1028=1400 Śaka expired) is Friday, 14th August, 1478 A.D., when the 1st tithi of the dark half began 6h. 59m. before and ended 16h. 36m. after mean sunrise.

(*f*) Date 11: 'The year 392 Vaiśākha vadi 9 Śukre.' The year is an expired year with Amānta scheme of the lunar fortnights. The corresponding European date (for 392+1029=1421 Śaka expired) is Friday, 3rd May, 1499 A.D.; when the 9th tithi of the dark half began 11m. before and ended 23h. 34m. after mean sunrise.

(*g*) Date 12: 'The year 392 Pousa vadi 3 Budhe,' with the same epoch (1028 Śaka expired Magha vadi 1) but with Pūrṇimānta scheme of the lunar fortnights the date 12 works out satisfactorily in the following way:—The year is an expired year. The corresponding European date (for 392+1029=1421 Śaka expired) is Wednesday, 20th November, 1499 A.D., when the 3rd tithi of the dark half began 3h. 31m. before and ended 20h. 5m. after mean sunrise.

But in no way do the dates 1, 2, 6, 8, and 10 work out satisfactorily according to this scheme of the epoch of the Lakṣmana saṁvat with any of the four modifications (i.e. the years being either current or expired and the month being either Amānta or Pūrṇimānta).

Of the dates of Prof. Kielhorn three dates (dates 2, 4 and 6) work out satisfactorily with the same epoch of La.-Sam. in the following ways:—

(*a*) Date 2: The year 317 "Chaitra sudi Partipada Gurau dine." The year is an expired year. The corresponding

[1] Vide calculation (*d*) under date 5, supra.

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European date is (for 317+1029=1346 Śaka expired), Thursday, 2nd March, 1424 A.D., when the 1st tithi of the bright half ended 4h. 2m. after mean sunrise.

(*b*) Date 4: The year 399 "Vaiśakha Kriṣnā Chaturthyām Chandre." The year is an expired year with Amānta scheme of the lunar fortnights. The corresponding European date (for 399+1029=1428 Śaka expired) is Monday, 11th May, 1506 A.D., when the 4th tithi of the dark half ended 5h. 19m. after mean sunrise.

(*c*) Date 6: The year 433 "Kartika Kriṣnā Saptamyām Śukre." The year is an expired year with Amānta scheme of the lunar fortnights. The corresponding European date (for 433+1029=1462 Śaka expired) is Friday, 22nd October, 1540 A.D., when the 7th tithi of the dark half ended 4h. 13m. after mean sunrise.

Three dates of Prof. Kielhorn (dates 1, 3, and 5) do not work out satisfactorily according to this epoch of the La.-Sam. era either the years be current or expired or the scheme of lunar fortnights be Amānta or Pūrṇimānta.

Of all the dates of the Lakṣman saṁvat hitherto available with verifiable data three dates (i.e. the dates 3, 4, and 10) contain equation with Śaka era: viz. date 3: La.-Sam. 293 Śrāvana sudi 7 Gurau=1321 Śaka; date 4: La.-Sam. 293 Chaitra Kriṣnā 6th Thursday=1324 Śaka; date 10: La.-Sam. 374 Kartika sudi 5th Wednesday=1416 Śaka. Date 3 has also the equation of the Saṁvat era with it.

It is curious to note that all these three equations of dates suggest three different epochs of the Lakṣmaṇa saṁvat. Of these, I have previously shown, the date 3 works out satisfactorily with equation of Śaka era as well as the Saṁvat era given therein indicating the epoch of the Lakṣman saṁvat to have begun in 1028 Śaka expired,[1] but as regards the equation of Śaka era in date 4 neither in Śaka year 1324 current nor expired there was 6th tithi of the dark half of Chaitra on Thursday either with the Pūrṇimānta or Amānta scheme of the lunar fortnights. As regards equation of Śaka year in date 10 although it apparently supports Prof. Keilhorn's theory of the epoch of the Lakṣmaṇa saṁvat, it fails to satisfy the test of verification in as much as neither in Śaka 1416 either current or expired there was 5th tithi of the lunar bright half of Kārtika on Wednesday. On the other hand it will appear from calculation (*b*) under date 10 that there was 1401 Śaka expired for 374 Lakṣmaṇa saṁvat and not 1416, when 5th tithi of the lunar bright half of Kārtika fell on Wednesday, this indicating that the Lakṣmaṇa saṁvat began in 1027 Śaka expired. So the numbers of Śaka years found in dates 4 and 10 are obviously incorrect and should be rejected.

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[1] Vide calculation (*c*) under date 3 supra.

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From Abu-l Faẓl's statement in Akbarnāma, although there are no data for verification along with it, it is clearly indicated that the Lakṣmaṇa saṁvat began to be counted from the beginning of the reign of King Lakṣmaṇa Sena of Bengal. There are reasons to believe that he was wrong in saying that the era was counted from the beginning of the reign of King Lakṣmaṇa Sena.[1] But the fact that Abu-l Faẓl noted that during his time in the Lakṣmaṇa saṁvat year 465 there was 1506 Śaka year cannot be lightly rejected. Thus there appears to be two starting points of the Lakṣmaṇa saṁvat era: e.g. 1028 Śaka expired according to the copper-plate grant of King Śiva Singha of Mithilā and another 1041 Śaka expired according to Abu-l Faẓl's statement in Akbarnāma.

Prof. Kielhorn, by verification of six dates of the Lakṣmaṇa Sena era has rejected the epoch of the Lakṣmaṇa saṁvat as indicated from the copper-plate grant of Śiva Singha in as much as it does not work out well with his first date (i.e. Bodha Gaya inscription date) although it works out well with the other five dates: while with the epoch indicated by Abu-l Faẓl, all the six dates work out well if the Lakṣmaṇa saṁvat year be considered as beginning from Kārtika sudi pratipada. It is further known from his calculation that his dates 2 (317 La.-Sam. Chaitra sudi 1 Gurau), 4 (399 La.-Sam. Vaisakha vadi 4 Chandre) and 6 (433 La.-Sam. Kartika Krishnā 7 Śukre) would work out satisfactorily if the epoch of Lakṣmaṇa Sena era be taken as indicated by the copper-plate grant of Śiva Singha and the year be considered as beginning from Magha vadi Pratipada, as is the case with the Lakṣmaṇa saṁvat in Mithilā at present.

There is much conflict of opinion as to the true meaning of the date found in the Bodha Gaya inscription, which is date 1 of Prof. Kielhorn as well as of this paper and which is considered by him and many other scholars as the earliest date of the Lakṣmaṇa saṁvat era found with verifiable data. Unlike other dates of the Lakṣmaṇa Sena era this date is peculiarly described thus: "Śrīmal-Lakṣmaṇa-Sena-deva-pādanām-atīta rajye saṁ 74 Vaiśakha vadi 12 Gurau." This is interpreted by Prof. Kielhorn and other scholars thus: "On the 12th tithi of the dark half of the Vaiśakha of the year 74 since the (commencement of the) reign (now) passed of the illustrious Lakṣmaṇa Sena deva on a Thursday." Dr. Ramesh Chandra Majumdar in a recent paper on "The Chronology of the Sena kings of Bengal"[2] has very clearly shown that such interpretation of the Bodh Gaya inscription would lead to hopelessly irreconcilable results. He suggests that the correct interpre-

[1] Vide "Prachin Lekhmala" by Hirachand Gauri Sankar Ojha (first ed.) and J.P.A.S.B., (N.S.), Vol. XVII, p. 7.

[2] Vide J.P.A.S.B., (N.S.), Vol. XVII, p. 7.

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tation of it is as follows: "On the 74th year of the year since the reign of Lakṣmaṇa Sena has become passed, Vaiṣakha vadi 12 Gurau." He has shown from independent historical facts that there are positive evidences which show that Lakṣmaṇa Sena did not come to the throne till some years, possibly a good many years after 1118-19 A.D. In no other dates of the Lakṣmaṇa Sena era do the words "atītarajye" occur. So peculiarly worded as this Bodha Gaya inscription is, and what ever may be its real import, there is sufficient reason to doubt whether the year in that inscription indicate one of the years of the Lakṣmaṇa saṁvat era.

Leaving the Bodha Gaya inscription date for the reason given above, there have been found altogether 16 dates of the Lakṣmaṇa samvat era with data for verification, of which five dates have been verified by Prof. Keilhorn and 11 dates have been verified in this paper. The result of the verifications of these 16 dates, when considered together may be summarised as follows:—

I. (*a*) Out of 16 dates of the Lakṣmaṇa saṁvat era hitherto found with data for verification nine dates (dates 2, 4, 9, 12 of this paper and dates 2, 3, 4, 5, 6 of Prof. Kielhorn) would work out satisfactorily with Prof. Kielhorn's (which is Abu-l Fazl's epoch) proposed epoch of the Lakṣmaṇa saṁvat era (i.e. Kartikadi sudi 1 of 1041 Śaka expired=7th October, 1119 A.D.).

(*b*) Out of the 16 dates above mentioned, seven dates (dates 3, 5, 6, 7, 8, 10, 11) do not work out satisfactorily with Prof. Kielhorn's scheme of the epoch of the Lakṣmaṇa samvat era either the years be considered as current or expired. Of these, dates 6, 8, and 10 do not work out satisfactorily with the copper-plate or the Mithilā almanac epochs either.

(*c*) Three dates (i.e. dates 3, 4, and 10 of this paper) out of the 16 dates, contain equations with Śaka era, the first date also contains equation with Saṁvat (Vikrama) era. Of these the equation of Śaka era in the last 2 dates appear to be incorrect as they do not satisfy the test of verification. Of these only date 3, which satisfy the verification test with both the equations with Śaka and Vikrama saṁvat era, suggests the epoch of the Lakṣmaṇa saṁvat to have begun in 1028 Śaka expired.

II. (*a*) Out of 16 dates, ten dates (dates 3, 4, 5, 7, 9, 11 and 12 of this paper and dates 2, 4, 6 of Prof. Kielhorn) work out satisfactorily with the epoch of the Lakṣmaṇa saṁvat as indicated by the date in the copper-plate grant of King Śiva Singha and taking the beginning of the year as indicated in the Mithilā almanacs (i.e. 1028 Śaka expired Magh vadi 1=1107 A.D., 11th January, Friday). Eight of these dates (dates 3, 5, 4, 9, 11 of this paper and dates 2, 4, 6 of Prof. Kielhorn) have the Amānta

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scheme of the lunar fortnights, while two dates (dates 7 and 12) have the Pūrṇimānta scheme of the lunar fortnights.

(*b*) Out of 16 dates, six dates (i.e. dates 2, 6, 8, 10 of this paper and dates 3, 5 of Prof. Kielhorn) do not work out satisfactorily with this scheme of the epoch of the Lakṣmaṇa saṁvat era either the years be considered as current or expired or the lunar fortnights be Amānta or Pūrṇimānta. Out of these six dates, three dates (dates 6, 8 and 10) do not work out satisfactorily either with Prof. Kielhorn's or copper-plate and Mithilā almanac epochs.

(*c*) Of the three dates (dates 3, 4 and 10) containing equations with Śaka era, the only one, i.e. date 3 which stand the test of verification suggest the epoch of the Lakṣmaṇa saṁvat to begin on 1028 Śaka expired.

III. (*a*) Out of these 16 dates, nine dates (dates 2, 3, 4, 5 and 6 of Prof. Kielhorn[1] and dates 3, 7, 9 and 11 of this paper) work out satisfactorily according to the alternative scheme of Prof. Kielhorn that the Lakṣmaṇa saṁvat commenced on Mrigasira sudi 1 of Śaka 1028 expired=29th October, 1106 A.D., with Amānta scheme of the lunar fortnights with the exception of date 7 of this paper which works out for Pūrṇimānta scheme.

(*b*) Out of these 16 dates, seven dates (dates 2, 4, 5, 6, 8, 10 and 12) do not work out satisfactorily according to this scheme of the La.-Sam. epoch, either the years be considered as current or expired or the lunar fortnight be Amānta or Pūrṇimānta.

(*c*) Two (dates, 3 and 4) of the three dates containing equivalent saka eras work out satisfactorily according to this scheme of the La.-Sam. era. But of these dates, the saka equivalent of date 4 appears to be wrong.

IV. (*a*) Out of these 16 dates, eight dates (dates 2, 4, and 6 of Prof. Kielhorn and dates 4, 7, 9, 11 and 12 of this paper) work out satisfactorily according to the epoch of the Lakṣmaṇa saṁvat as indicated by the Mithilā almanacs only, i.e. Magh vadi 1, Śaka 1029 expired=30th January, 1108 A.D., with Amānta scheme of the lunar fortnights with the exception of dates 9 and 12 of this paper which work out for the Pūrṇimānta scheme of the lunar fortnights.

(*b*) Out of these 16 dates eight dates (dates 3, 5 of Prof. Kielhorn and dates 2, 3, 5, 6, 8 and 10 of this paper) do not work out satisfactorily either the years be considered as current or expired or the lunar fortnights be Amānta or Pūrṇimānta.

V. Three of these 16 dates (dates 6, 8 and 10 of this paper) do not work out satisfactorily either with any of the four epochs suggested above either the years be current or expired, and the scheme of the lunar fortnights be Amānta or Pūrṇi-

[1] For working of these dates according to this epoch vide "The Indian Antiquary," Vol. XIX, 1890, p. 1.

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mānta. For easy reference these results are given here, as far as possible, in a tabular form.

From the above results it cannot be said that Prof. Kielhorn's conclusion about the epoch of the Lakṣmana saṁvat is correct in as much as it fails to satisfy the test of verification with respect to about half the number of the dates available with data of verifications. Nor can it be said that the copper-plate grant of King Śiva Singha is spurious and thereby its date unreliable and the almanac makers of Tirhut have forgotten the true epoch of the Lakṣmaṇa saṁvat era when the above fact is taken into consideration with the fact that the majority of the Lakṣmaṇa saṁvat dates hitherto found with data for verification work out satisfactorily with the epoch indicated in the copper-plate grant of King Śiva Singha and Tirhut almanacs. Of course this epoch cannot be said to have been established, as it does not work out satisfactorily with six dates of the era with verifiable data available as yet, three of which is unworkable with any one of the epoch hitherto suggested epochs of the said era.

These results rather point to two different epochs of the Lakṣmaṇa saṁvat era and make it more difficult to find a common epoch by which all the dates may work out satisfactorily. The whole question requires a careful examination by scholars to find out whether there is one common epoch of the era known as the Lakṣmana saṁvat or La.-Sam. which was in use in Bengal and Mithilā and is being still used in the latter country; or there were more than one epoch from which the era was counted as has been suggested by scholars before and have also been recently done.[1]

I am an amateur student of this subject. If this paper of mine be capable of raising a proper discussion of the subject among scholars better competent to deal with it, the object of my humble effort will be amply fulfilled.

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1 Vide J.P.A.S.B. (New Series), Vol. XVII, pp. 15-16.

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A—Table showing the results of verification of the 16 dates of the Lakṣmaṇa Saṁvat.

Serial Number of dates.	No. of dates of this paper	No. of dates of Prof. Kielhorn's paper.	La. Sam. Dates with data for verification.	1027 S.E.		1028 S.E.		1029 S.E.		1030 S.E.		1040 S.E.		1041 S.E.		1042 S.E.		Remarks.
				A	P	A	P	A	P	A	P	A	P	A	P	A	P	
1	2	..	La.-Sam. 212 Śravana sudi 7 Thursday.													K	(e)	
2	3	..	La.-Sam. 293 Sravana sudi 7 Thursday.			A C	K(c) M(c)											This is Śiva Singha's copper-plate-grant date and contains equation with Śaka and Saṁvat year and works satisfactorily.
3	4	..	La.-Sam. 293 Chaitra vadi 6 Thursday.			M(c) CM(c)										K(e)		This date contains equation with Śaka year, but with that Śaka year does not stand the test of verification.
4	5	..	La.-Sam. 299 Pausa sudi 9 Monday.					C	M(e)									
5	6	..	La.-Sam. 309 Sravana sudi 15 Tuesday.															This date does not work out satisfactorily with any of the suggested epochs.
6	..	2	La.-Sam. 317 Chaitra sudi 1 Thursday.					A- C- M-	K(e) M(e) (c)							K	(e)	
7	7	..	La.-Sam. 321 Kartic amāvasya Saturday.						AK(e) CM(e)	M(e)								
8	8	..	La.-Sam. 345 Agrahāy-ana sudi 6 Thursday.															This date does not work out satisfactorily with any of the suggested epochs.
9	9	..	La.-Sam. 372 Sravana badi 1 Friday.			AK(c) CM(c)					M(e)			K(c)				

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This date contains equation

badi 1 Friday.			CM(c)															
10	10	..	La.-Sam. 374 Kartic sudi 10 Wednesday.															This date contains equation with Śaka year, but does not stand the test of verification and does not work out with any of the suggested epochs.
11	..	3	La.-Sam. 376 Paus vadi 13 Wednesday.		AK(c)										K(e)			
12	11	..	La.-Sam. 392 Vaisakh vadi 9 Friday.					CM(e) AK(e) M(c)										
13	12	..	La.-Sam. 392 Paus vadi 3 Wednesday.						M(e) CM(e)				K(c)					
14	..	4	La.-Sam. 399 Vaisakh vadi 4 Monday.					AK(e) CM(e) M(c)								K(e)		
15	..	5	La.-Sam. 424 Paus sudi 10 Friday.	A	K(c)										K	(e)		
16	..	6	La.-Sam. 433 Kartic vadi 7 Wednesday.					CM(e) AK(e) M(c)					K(c)					

Explanations of the Table :—The La.-Sam. dates are given in the 4th vertical column. In the 1st horizontal column are given the Śaka expired years in short called S.E. A and P under S.E. year mean Amānta and Pūrṇimānta scheme of lunar fortnights. K represents Kielhorn's epoch of Kartika sudi 1, 1041 S.E.=7th October, 1119 A.D. AK represents Kielhorn's alternative epoch of Mrigaśira sudi 1, 1028 S.E.=29th October, 1106 A.D. M represents Mithilā almanac epoch of Māgha vadi 1, 1029 S.E.=30th January, 1108 A.D. CM represents copper-plate Mithilā almanac epoch of Maga vadi 1, 1028 S.E.=11th January, 1107 A.D. (e) and (c) when attached to these epoch-indicating capital letters indicate the year as expired or current respectively.

Example: Take date No. 9, i.e. La.-Sam. 372 Śrāvana vadi 1, Friday. From the table it will be found that in the horizontal line with the date are found the letters AK(c) and CM(c) under vertical col. of 1028 S.E. and sub-head A meaning thereby that the date works out satisfactorily with both Kielhorn's alternative epoch and copper-plate Mithilā almanac epoch with Amānta scheme of lunar fortnights and the year 372 La.-Sam. be considered as current and to convert the La.-Sam. year into S.E. year, 1028 be added to it. In the same horizontal line the letters M(e) and K(c) are found under vertical col. of 1030 S.E. under sub-head P and under vertical col. of 1041 S.E. under sub-head A respectively meaning thereby that the date also works out satisfactorily with the Mithilā almanac and Kielhorn epochs, in the former case the La.-Sam. year being expired with Pūrṇimānta scheme of the lunar fortnights and in the latter case the year being current with Amānta scheme of the lunar fortnights, and to convert the La.-Sam. year to S.E. year 1030 and 1041 should be added to the year according to Mithilā and Kielhorn epochs respectively. In the case of tithis making no difference of date for Amānta and Pūrṇimānta scheme (i.e. sudi) the epoch-indicating letters have been placed on the parting line between A and P.

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The supposed sculpture of Zoroaster on the Tak-i-Bostan.

By Sir J. C. Coyajee, Kt.

Quite a number of hypotheses have been put forward as regards the identity of the "radiated figure" on the Tak-i-Bostan. Prof. Rawlinson and Mr. Thomas considered that this figure was meant to represent Ormazd. Sir R. Ker Porter and Flandin have thought the figure to be Zoroaster; while others, like the late Dr. Justi, have favoured its identification with Mithra. In his learned work on "Zoroaster, the Prophet of Iran," Prof. A. V. Williams Jackson concludes after reviewing the suggestions that, "so far, the case as between the Mithra and the Zoroaster theories is about evenly balanced;" but, obviously he is not quite satisfied with the proofs brought forward for the hypotheses so far advanced, since he adds that "the whole subject of the portraiture of Zoroaster requires further investigation."

In this paper I venture to put forward the suggestion that the radiated figure on the Tak represents the angel Bahram (or Verethraghna) who plays the leading part in all the miraculous legends associated with the career of Ardeshir-i-Papakan and the rise of the Sassanide dynasty.

I am fully aware that I have no pretensions to speak with authority on such a question of Iranian archaeology; but it is surely permissible even for an outsider to state a case and to support it by arguments, leaving the decision of the matter to eminent experts.

I shall begin my treatment of the subject by stating the case for my hypothesis as regards the identity of the figure with the angel Bahram; I shall then examine the grounds for and merits of the other suggestions in the field which would identify it with (a) Mithra, (b) Zoroaster and (c) Ormazd.

(1) *Strong presumption from the predominance of the angel Bahram in Sassanide tradition and History.*

It would be difficult to exaggerate the prominence of the cult of Bahram in the history, religious faith, art and numismatics of the Sassanides; and this circumstance, it is submitted, forms by itself a strong support for, and a very suitable introduction to, my suggestion as regards the identity of the figure we are studying with that angel. We have before us a group of figures symbolising the rise of the Sassanide dynasty to power and in the group there is the figure of a divinity whose identity

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we have to determine. Surely, the presumption is strong, in the absence of reasons to the contrary, that the figure represents the angel who played the most prominent part in the life and faith of Ardeshir and in the worship and belief of his dynasty. In the legends regarding the very birth and childhood of Ardeshir which are referred to by writers like Moses of Chorene, an important part is played by animals like the raven, the eagle and the goat which were regarded as incarnations of Bahram (see Rawlinson's *Sixth Oriental Monarchy* page 366 note). The Karnameh and the Shahnameh both attribute the rescue of Ardeshir from great perils at the crisis of his career to this angel. On the coins of the Sassanides we often find kings, princes and even queens bearing crowns adorned with crests representing the boar, the eagle, the bull and (the horns of) the ram—all incarnations of the same angel (cf. Paruck *Sasanian Coins* No. 97, 125, 129 to 160; 173 to 178; 191-2, 295 and Herzfeld *Paikuli* vol. 1, p. 48). Nor is the fire altar ever absent from the coins.[1]

It is also very significant that no less than six Kings of the dynasty bore the name of the same angel, while other minor rulers like "Shahran Baraz," "Varahran-Sapor," and "Varasgurte," (cf. Herzfeld's *Paikuli* I p. 161) have similar designations. Dr. Herzfeld also mentions names like Varaz-Peroz, Varaz-Shapuhr, Varaz-Tirdat as characteristic of the times, adding that the boar is the totem animal of the god Vihram (Op. cit. I. 130). Again on the dresses of the Kings, on the plate of the gold and silver belonging to them, and on the silks made for them, appears a royal emblem or crest which was compounded of the characteristic features of several of the incarnations of Bahram (cf. Sarre *Die Kunst des alten Persien*, 94, 95, 101, 140, 141). On the few plaques which have been fortunately[2] picked up on the site of Ctesiphon we discover

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[1] I would refer for a moment to the bust which in some cases appears in the flames, on the reverse of Sassanian Coins which has been often supposed to be a Fravahar, and sometimes the god Hormazd (cf. Herzfeld Paikuli I, 82). Now I submit that in many cases this identification might be correct, but, not always so. For, in the first place, we have hardly any authoritative statement in Avesta or Pehlavi texts about Fravhars manifesting themselves in the sacrificial fire, and might have expected that such an interesting phenomenon would receive some notice in these texts. In the second place I would suggest that in some cases at least, the figure in the flames represents the angel Bahram, since we are expressely told in the Dadistan-i-Dinik (Chap. 31 verse 7: S.B.E. Vol. 18 p. 65) that "when through the majesty of the creator spirits put on worldly appearances .. then he whose patron saint (ahvo) is in the world is able to see the attending spirits in such similitude as .. when *they see a fire in which is Varahram.*" More authority should be given to an express text than to conjecture.

[2] We note that in plate 120 of Dr. Sarre's work the head of the royal emblem is that of a camel; in plates 94 and 102 the head is that of a boar; in plate 94 and elsewhere the emblem has the talons and the golden collar of the bird Varengana as required by Bahram Yasht verses

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vivid and artistic representations of the ram and the eagle—similar incarnations. (Sarre *op. cit.* plate 103.) Nor is this all. The chosen and best troops of the Sassanide army were called "vartragikan," while their leader is "Ohormizd-varaz" (Herzfeld's *Paikuli* 1 p. 173) or "Vartragnikan-Khwatay." Thus both the *élite* corps and its general are called after Bahram. Even the throne of Khusrau II is called by Firdausi "Mish-sar"—which has similar reference to the angel. Indeed there was scarcely an occasion of any importance when the Sassanide failed to mark his devotion to the guardian angel of his line. All these lines of argument prove that historically the position of the leading Yazata was taken by Bahram in the Sassanide epoch—just as that rôle was filled by Mithra under the earlier dynasty. Consequently, it would be strange indeed, if Bahram was found unrepresented on the bas-relief which symbolised the rise of the Sassanides to power.

(2) *Argument from Bahram Yasht, Sections 6 and 10.*

The main argument for my suggestion as regards the identification of the figure on the Tak-i-Bostan with Bahram is the striking resemblance between the figure and the description of the personal characteristics of that angel given in the Bahram Yasht. I would point out here the resemblance holds both as regards the general idea of the figure and its details.

Thus in Bahram Yasht verses 26-27 (S.B.E. Vol. 23, p. 238) we have a picture given of Bahram—"the best armed of the heavenly gods" which is unmistakably the same as the figure in our sculpture. "Verethraghna.....came to him the tenth time.....in the shape of a man, bright and beautiful, made by Mazda; he held a sword *with a golden blade, inlaid with all sorts of ornaments*. Thus did Verethraghna come, bearing the good glory made by Mazda." This passage accounts for many of the main features of the figure we are studying—the halo of glory on its head, the sword which it holds, the "ornaments"

11, 15, 33, and 35. Many representations of that emblem have on them scales, to fulfil the requirements of the fish "Kara" in the same Yasht verse 29. In all drawings and carvings of the emblem the wings and the feathers of the tail are prominent, since it was the possession of these feathers of the bird which helped to secure victory and ensure the bearer against magical spells (Bahram Yasht, verses 34, 36 and 38 where we read how the feathers are to be utilised in order to secure victory). That the emblem was a royal one can be gathered from the same Yasht verses 39-40, where we are given the names of Kings who employed the aid of the bird Varengana, and we are also informed that "the feather brings to its bearer the homage of men." (Verse 36.) Nor would Khusrau II, the proudest of the Sassanides, bear on his dress any but the royal and most sacred emblem. The fact is that the whole of the Bahram Yasht could be used as a commentary to explain that emblem. I am aware that somewhat similar emblems were used under Achemenides, but in those days they did not bear the distinguishing marks of Bahram; they were later adapted to that cult.

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on that sword, as well as for the martial attitude of the figure to which I would draw particular attention.

So far I have referred to the translation of this verse by Darmesteter. Other translators also interpret the text so that the description of the weapon agrees with the facts presented by the bas-relief. Spiegel has "bearing a sword with a golden hilt, adorned in every manner." The translations by Harlez and Bartholomæ do not differ in any respect.

Further, I would invite attention to the sixth section of the same Yasht where we read another description of the angel: "Verethraghna made by Ahura, came to him the sixth time, running in the shape of a beautiful youth of fifteen, shining, clear-eyed, *thin-heeled.*" Spiegel translates the words as "small heels," while Bartholomæ agrees, adding in his *Worterbuch* a note that the small heels were meant to be a mark of beauty. Small or delicate heels are thus a distinguishing feature both of the angel and of our figure. Judging by the good photographs in Sarre's book, page 42 or Jackson's *Persia Past and Present*, page 215, or by the excellent sketch furnished by Dieulafoy, we find that the feet of the radiated figure are the smallest among those of the group on the bas-relief. Even the footwear of the angelic figure appears something more shapely and flexible than the military boots worn by the royal figures. But an even more important and significant fact than the size of the feet is that it is just those "thin heels" which are resting on the supposed sun-flower. The idea of the sculptor no doubt was that such delicate heels required a soft support. Possibly also the necessity of the lotus was also suggested to the sculptor by the numerous images of Buddha and other sacred figures from India which are represented as resting on lotuses. But, while in the Indian sculptures the whole foot is supported by the flower, on the Tak-i-Bostan only the heels rest on the flower, thus emphasising once more the idea of the "small or delicate heels."[1]

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[1] I have emphasised the fact of Bahram (the Mars of Persia) possessing "small" or "delicate" heels; for, besides serving our immediate purpose of identifying the figure which we are studying, it carries us further, and shows us a curious similarity in a certain detail between the "*heldensaga*" of Iran, Greece, and India. We all know that Achilles was vulnerable only in his heels; so also in the Bahram Yasht chapter 6 the angel Bahram or Mars is endowed with thin or delicate heels. But there is also another traditional, hero of the Indo-Iranian mythology, Gandarewa—the spirit of the deep (called the "golden heeled") in the Keresaspa saga, who is also vulnerable in the same region. For, after a conflict of nine days Keresaspa finds no other way of overcoming him, than by grasping the sole of his foot and flaying off his skin. (Yasht XIX. 41. Pahlavi Rivayat in S.B.E. XVIII. 375. Carnoy, *Iranian Mythology* Page 325). In this connection, Prof. Taraporewalla of the Calcutta University has drawn my attention to the fact that in Indian Mythology Krishna is represented as having a vulnerable heel through which he was shot by a huntsman. Here are unexplained coincidences

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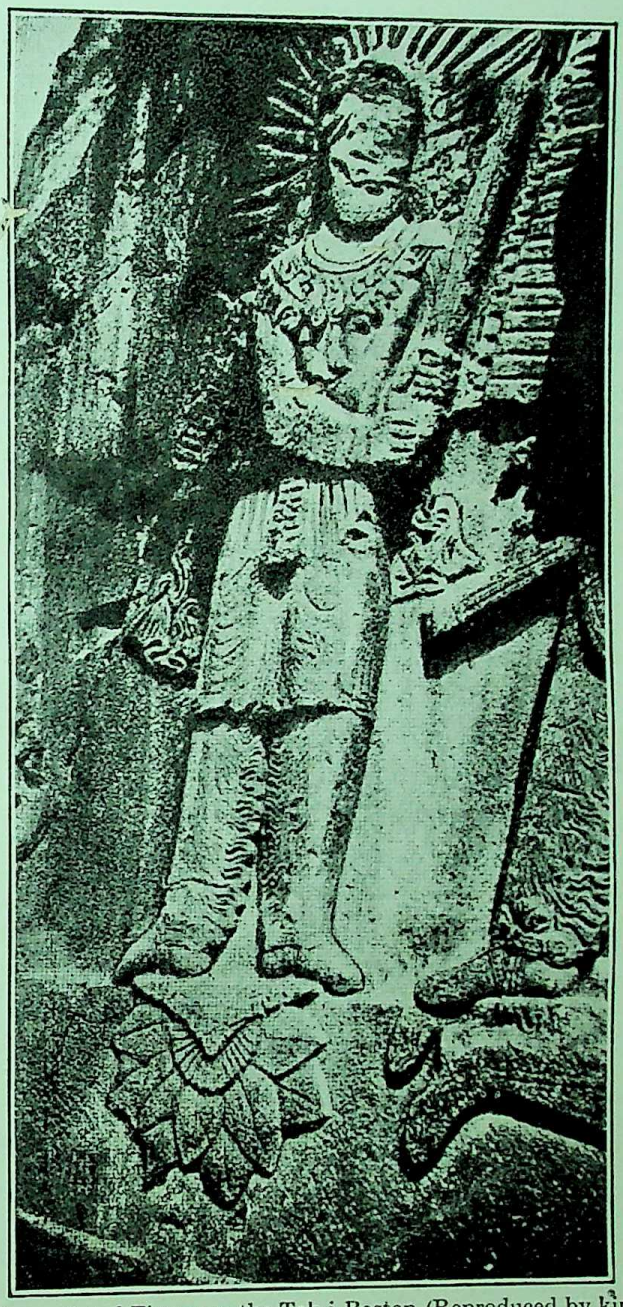

The radiated Figure on the Tak-i-Bostan (Reproduced by kind permission of The MacMillan Company, from "Persia Past and Present," by A. V. Williams Jackson).

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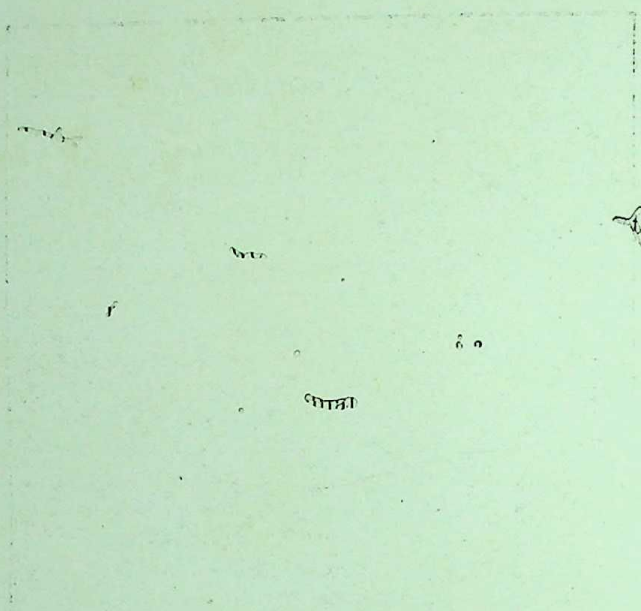

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What I venture to infer is that the sculptor of the figure on the Tak-i-Bostan having before him the task of representing the angel Bahram, paid due regard to both human incarnations of that angel as given in the Yasht, and combined these two in a single picture giving it the manly strength and ornamented sword of the warrior described in section 10 and the youthful appearance, light beard and moustache and delicate feet of the person described in section 6. Consequently, he portrayed on the head of the figure that "Glory made by Mazda" which is insisted on throughout the Yasht as the appanage of Bahram as an angel. It is obviously a compromise portrait of the angel based on the two passages in the Yasht.

I might be allowed to quote yet another passage from the Bahram Yasht, which will cover some other features in the bas-relief. The 63rd verse of that Yasht describes the angel Bahram as one who "binds the hands, confounds the eye-sight, takes the hearing from the ears of" sinners who "can no longer move their feet." This is an apt description of the awful plight of the fallen Artabanus in the bas-relief.

In general, it might be remarked, the Bahram Yasht seems to be the Yasht most striking in its accumulation of scenic effects. Each section brings up some characteristic picture of strength and virility, and in each case, this exhibition of energy is followed up by the chorus-like words repeated at the end :— "Thus did he come, bearing the good Glory made by Mazda." In the cult of this war-like angel, a succession of rich scenic effects must have been produced before the mental vision of the votaries and each of these scenes must have roused that admiring and enthusiastic response or chorus.

(3) *Corroboration of the Hypothesis from the Karnameh.*

As by general consent one of the figures on the bas-relief is that of Ardeshir I, it is obvious that the highest authority at our disposal for the interpretation of the relief and the identification of the figures on it is the Karnameh or biography of Ardeshir. The Karnameh belongs to the Sassanide age, and its guidance is equally valuable to whatever date in that epoch we ascribe the construction of the bas-relief.

Now, it is noteworthy that in the Karnameh *there is no mention of the angel Mithra,* while Ardeshir is made habitually to ascribe all success or happiness that he achieves to the "Glory of the Kayanians" and the "Victorious King of the Sacred Fires" (viz. the Atash-i-Vahram) jointly. Thus, in Darab Dastur Peshotan Sanjana's edition of the Karnameh, Chapter IV Section 15, the victory over Artabanus is ascribed

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and resemblances worthy of being treated and explained by a *savant* of the learning and genius of Sir James Frazer.

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to the glory of Kayans. In Chapter VII Section I the rescue of Ardeshir from the Kerman army is due to the glory of the Kayans; similarly in Chapter III Section 15 and 20 his rescue from the pursuit by Artabanus is also ascribed to the same glory. In Chapter X sections 16 and 17, on seeing his son safe Ardeshir gives thanks to the glory of Kayans and to "Victorious King of the sacred fires" (viz. Vahram) and he establishes an Atash-i-Vahram on that occasion. In Chapter VIII section 17, on the conquest of Kerman, he causes an Atash-i-Vahram to be established there. Again, the Persian name of the city built by Ardeshir after his victory over Artahanus was Khorreh-i-Ardeshir.

Thus, from the Karnamch we might infer that the figure with the halo on the bas-relief would be either the Glory of Kayans or Bahram. But the Glory of Kayans could, obviously, not be portrayed as a human figure; for it was only an attribute passing from certain historical personages to others e.g. Yima, Keresasp or Kai Khusro. It is so far from having a fixed and definite human shape that it sometimes becomes identified with an arm of the sea or a bird (Zamyad Yasht 35, 56). Hence it was only possible to form an image of the angel Bahram on the bas-relief, but bearing the halo of the glory. For, there had been going on a syncretism of the Glory (Khvarenangho) and Bahram, and a consolidation or mixing up of their attributes and incarnations. Thus in the Zamyad Yasht itself (verse 35) the Glory assumed "the shape of a Varaghna bird"—which is also an incarnation of the angel Bahram (Bahram Yasht 18–21). This identification of the two was also recognised by the Karnameh; for when the Glory appears to rescue Ardeshir from the pursuit of Artabanus it assumes the shape of a ram or an eagle (Karnameh Chapter III, Section 1120) which are other incarnations of Bahram. The figure on the Tak-i-Bostan is, therefore, that of Bahram, but "bearing the glory," as he is recognised so often to be doing in the Bahram Yasht. This identification and syncretism of Bahram and the Glory of Kayans was carried to its logical conclusion after the fall of the Sassanides. For, in the absence of any king of the old faith, the Parsis in India argued, most logically from the premises furnished by the Bahram and the Zamyad Yashts, that the Royal Glory was residing in the fire of Bahram which they had established in India. They, therefore, conferred on it the title of "Iranshah" the King of Persia, and in that fire of Bahram the "Glory of Kayans" has been finally subsumed. It would be difficult to find another example of such a steady, deliberate and complete Syncretism.

(4) *Images of Bahram in medieval Persia.*

It is perhaps not irrelevant to point out that in Persia, in

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the middle ages, images of Bahram were to be found, which were in some respects similar to the figure on the Tak-i-Bostan, and which were worshipped by Mystics who professed to adhere to the Zoroastrian tradition. Thus the Dabistan-i-Mazahib refers to temples of Bahram where his image was carved in red stone; he has a crown on his head, a sword in his right hand which hangs by his side, while in the left hand which is raised there is an iron scourge. In Sir John Malcolm's History of Persia we have the images of Bahram reproduced (Vol. I, page 186). Both the figure on the Tak and the one reproduced by Malcolm are those of young angels, with light moustache and beard, and holding up a weapon. The radiation on the head of the former figure *might* in the process of extreme artistic simplification (such as is found in the images reproduced by Malcolm) be reduced to a crown. In any case, the crown on the head of the medieval images of Bahram is much like the "turreted crown" on the reverse of many Sassanide coins (cf. Herzfeld *Paikuli*, Vol. I, page 32).

(II) The Mithra Theory Examined.

Coming to examine the theory which identifies the radiated figure with Mithra, we would do well to remember that the tablet on the Tak-i-Bostan is not only a representation of the transfer of the crown to the Sassanides in the person of Ardeshir or his son, but also of the fall of Parthia, or of its last prince who is drawn as prostrate under the feet of the two Sassanide Kings. But, surely, in the delineation of such a scene Mithra would be quite out of place, since he (together with the sun) was one of the chief objects of reverence to the Parthians. As Rawlinson tells us, under the Parthians "temples of the Sun abounded, where images of Mithra were the objects of worship, and the Mithraic cult was carried out with a variety of imposing ceremonies." (Rawlinson's *Seventh Great Oriental Monarchy*, page 56). Thus, to a great extent Mithra was identified with the Parthian *regime*, which is also proved by the number of Kings of Parthia who bore a name derived from Mithra, i.e. appropriately, Mithradates. He was obviously not the deity to preside over a scene emphasising the fall of Parthia and its dynasty; indeed, he would be quite out of place therein. Mithra could not be expected to delight in the transfer of power from a house which gloried in the name of "Mithradates" to one which rejoiced in the name of Bahram.

(1) *Examination of the "Sun-flower" argument.*

In support of the theory identifying the figure on the Tak-i-Bostan with Mithra, much has been made of the "sun-flower" on which the figure stands and the "mace" which he is

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supposed to hold. As regards the sun-flower, however, we must have due regard not so much to our own ideas on the subject as to the sacerdotal "language of flowers" as understood by the Sassanide age. Our authority on this topic should be the Bundahish, chapter 27, verse 24, which begins by informing us that every single flower is appropriate to an angel and then lays down that "all violets" are the flowers appropriate to Mithra; the lily is sacred to Horvadad, and the water-lily to Avan," while "the myrtle and jasmine are Auharmazd's own," and "the Sisebar is Vahram's." In the presence of such a detailed and developed angelologic significance of flowers, the presence of the sun-flower at the foot of the image on the Tak does not help the Mithra theory. It might be added that we have proof that the sculptors of the Tak-i-Bostan were aware of the above-mentioned allocation of particular flowers to particular angels; for, where they represent the goddess Ardvisura Anahita, on the capitals of that Tak they do not fail to engrave by her side the water-lily (cf. Rawlinson, The *Seventh Monarchy*, page 601 and Sarre *Die Kunst des alten Persien*, page 44) in strict accordance with the rule laid down by the Bundahish.

Even had the Sun-flower appertained to Mithra according to Sassanide ideas, there was neither reason nor tradition for placing it under the feet of Mithra. Thus in the case of Anahita, for example, the lily is placed at her side. Only in the case of Bahram, the flower had to be under his "thin heels" to protect them.

(2) "*Mace*" *or* "*Sword*"?

Nor can it be proved that the figure is bearing in his hands a "mace;" and indeed a comparison of the length and breadth of the weapon in question with the scabbard of the central figure on the Tak strongly suggests that it is a sword. As Prof. Jackson significantly observes "the grooved lines (on the staff) which run parallel with its entire length are plainly visible, and resemble the flutings on the scabbard of the middle figure" (*Persia Past and Present*, page 218). Such a close correspondence would be impossible and unmeaning between a "mace" or a "staff" and a scabbard. Similarly, Dr. J. J. Modi, the *savant* who visited the place most recently, says that the weapon in question looks much "like a long and thin chip," a description which might well apply to a straight sword such as was used in Persia in those days, but rules out the idea of a "mace." Nor is it necessary to suppose that because the weapon is held with both hands it must be a mace; for we find on various coins of the Sassanides both the King and priest is holding a sword with both hands (Cf. Coins No. 101, 194–204 and 258–277 in F. D. J. Paruck's *Sassanian coins*) brought to one side before the sacred

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fire. Obviously, it was one of the ceremonial ways of holding the sword on certain religious occasions; other methods of carrying the sword on similar occasions can also be found on Sassanian coins. There appears to be a remarkable similarity between the figure on the Tak-i-Bostan and that of some of the figures on the reverse of the coins of Shapur II and Shapur III, as regards attitude, dress and the mode of carrying the sword in both hands. This might corroborate the view as to the bas-relief having been constructed in the reign of Shapur III.

(3) *The Argument from the nimbus of rays around the head of the figure.*

This has been the main argument advanced to prove that the figure in question is that of Mithra. But not much weight can be given to it. The Glory was not a characteristic feature of Mithra as distinguished from other angels. We have already seen both from the Bahram Yasht and Zamyad Yasht that the glory was closely associated and even identified with Bahram. When, for instance, the Shahnameh or the Karnameh mention the fact of the ram or the eagle helping Ardeshir in his flight from Artabanus they attribute the credit to the Glory, though the ram and the eagle are incarnations of Bahram—so close was the association of the glory and that angel in the public mind. But, if we take into account the rest of the Zoroastrian angelology, the Glory was in no way peculiar to Mithra. A reference to Stein's "Zoroastrian Deities on Indo-Scythian Coins" will show that besides Mithra other deities were pictured with the "the radiate disk"—Ardavahishto, for example. The glory was not even a distinguishing characteristic of deities, but belonged to heroes like Yima and Keresaspa of old, and even to some heroes of a much later date. Thus, in the Karnameh, we are given a vision of Papak in which he sees *Sasan with the glory of sun-rays surrounding his head.* Thus the presence of the halo or glory does not help us at all to identify the figure in question with Mithra. It is, therefore, surprising that a learned *savant* like Dr. Herzfeld identifies a figure on the reverse of the *aureus* of King Hormizd with Mithra, on the ground that it is "clearly characterised by the nimbus of sun-rays round his head" (Herzfeld's *Paikuli* I, page 46). It would be singular, to say the least, that Mithra, the God of heavenly light, should be made to stand in worship before an earthly fire.

(4) *Other Arguments for and against the Mithra theory.*

It is no part of the work of a historcial enquirer to keep back evidence which supports the view which he controverts. I have in my humble way endeavoured to appreciate the merits of the theory which would identify the figure on the Tak with

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Mithra. I feel that its advocates could and should have quoted in favour of their hypothesis, Mihir Yasht verses 27, 37, 43, 45, and 113, where that angel is said to "throw down the heads of those that lie to him" (as the head of Artabanus is thrown in the bas-relief); to guard the ways of those whose life is sought by men who lie unto Mithra (as the life of Ardeshir I had been sought by Artabanus) and to "confound the way of the nation that delights in havoc" (like the way of the Parthians). The view that the other two figures in the bas-relief—besides that of Ardeshir—represent Ahura and Mithra also receives some slight support from the Mihir Yasht verse 113 (S.B.E. XXIII, p. 148).

These arguments occurred to me, and I still admit their force. But the whole historical setting of the bas-relief is against the hypothesis that the figure is Mithra's. It was not possible to accuse the Parthians who were devoted to Mithra, who gave the name of Mithradates to many of their sovereigns, and in whose *regime* Mithraism started from Persia almost to conquer the world, of being among "those who lie to Mithra" Rather, indications are to be found showing that the Arsacides accused Ardeshir I of "lying to Mithra" in that he rose in rebellion against suzerain. (Karnameh chap. 9 section 5.) This fact in itself would deter Ardeshir from engraving Mithra on his bas-relief. But, further, the physical characteristics ascribed to Mithra in his Yasht (verses 67, 112, and 124) are not to be found in the figure on the Tak-i-Bostan; and we have good cause to regard with respect the knowledge of Avesta and later tradition exhibited by the sculptor of the bas-relief. Above all we have to take account of the change of emphasis in the matter of devotion to particular angels which is noticeable between the Parthian and the Sassanide epochs. This change is proved by the absence of any mention of Mithra in the Karnameh—a work saturated with religion, legends and mythology of all kinds. Nor does the Paikuli inscription refer directly or indirectly to that angel.

A great difficulty in the way of the Mithra theory is the position of the central figure of the bas-relief with his back almost turned towards the figure with the nimbus of rays. It is inconceivable that the King should turn his back towards Mithra. On the Nimrud Dagh tablet the King has his face fully and devoutly turned towards Mithra. But, if we take the nimbus-figure to be Bahram, this difficulty disappears. For, in the Shahnameh and the Karnameh when the ram or eagle representing Bahram comes to the rescue of Ardeshir, it sits behind the back of the latter to protect him. So also in various coins of the Sassanide period, the King and the priest standing on each side of the fire assume an attitude averted from the fire. (Paruck *Sassanian Coins* No. 105–145 Herzfeld *Paikuli* Vol. I, p. 48, plate A, Fig. 20, No. 2 and 3).

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(5) *Dr. Herzfeld's Suggestion.*

I have studied the suggestion advanced recently by no less a *savant* than Dr. Herzfeld, and accepted by Dr. Sarre, to the effect that the bas-relief we are examining represents the crowning of Ardeshir II by Ahuramazda assisted by Mithra. But various difficulties present themselves in the way of the acceptance of this suggestion. In the first place neither according to the Mihiryasht nor the Pehlavi texts has Mithra any special functions as regards the coronation of Kings. Originally the god of the heavenly light, he became more and more a guardian of Morals, the Knower and Preserver of truth and good faith, but without any reference to earthly royalty. In support of this we note that, while the idea of royalty and coronation occurs so often both in the Karnameh and in the many contemporary inscriptions translated so ably by Dr. Herzfeld himself, there is no mention of Mithra in any of these. There is no question as to the fact that it is Khwareno (royal glory) who should be the chief factor in the conferment or transfer of sovereignty. This glory is referred to repeatedly in the Karnameh, and thrice at least on the Paikuli inscription very pointedly. We read in the Paikuli Inscription (Vol. I, page 97) that "the King of Kings graciously from Armenia yonder to Eranshahr might return and the *majesty*, the Empire and his own throne and the royalty of his ancestors from the gods might receive." There are other references to the Khvarreh of Ardeshir I himself in that inscription which show the importance of that angel in any representations of coronations. In fact, according to all those fairly contemporary documents, the proper angel to be present on the Tak-i-Bostan relief should be the Khvarreh, whether the coronation is that of Ardeshir I or of Ardeshir II. This, I admit, but I add that this Glory is most often borne by Bahram, and is in a very important sense identified with him. Sir A. Stein has observed, we are dealing with an age of syncretisms, and there had already been among them a syncretism of Bahram and Vanainti Uparatat. In any case, there was no warrant for representing the Glory as a warrior bearing a sword; for in the Zamyad Yasht the Glory is a quality associated with angels and men and even residing in birds and arms of the sea.

I might be allowed here to submit some arguments in favour of the view that the central figure on the bas-relief is Ardeshir I (and not Ardeshir II). As we have seen, the Paikuli inscription and the Karnameh which represent genuine and general Sassanide traditions associate the Khvarreh (Glory) with Ardeshir I, almost whenever they mention him. There can hardly be a doubt that we have a representation of the Khvarreh (the nimbus or glory) on the bas-relief, and this fact makes it very likely that the adjoining figure is that of

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Ardeshir I. We read in the Karnameh of the Khvarreh coming and standing very near Ardeshir I and that seems to be the subject of the picture on the bas-relief. In the second place, had a comparatively unimportant King like Ardeshir II been represented on the bas-relief, he would have taken care to add his own name with an inscription in order to commemorate himself; even Shapur II and Shapur III have not neglected that precaution on the Tak-i-Bostan. It might be safely conjectured that one of the most striking of bas-reliefs on the Tak-i-Bostan (the one we are discussing) was left without a descriptive title, only because it represented a particularly distinguished prince and a scene well known to the people from history and legend. Finally, there is the likelihood that Ardeshir II was a very old man at his accession (Herzfeld *Paikuli* I. p. 50) while the central figure on our bas-relief looks nothing like so old.

With all respect for Dr. Herzfeld, I advance the following objections to his hypothesis :—

(1) We have no warrant or authority for supposing that the right hand figure of the sculpture is Ohormizd, as that savant supposes. The figure has none of the paraphernalia and equipment of Ohormizd as drawn on other bas-reliefs. On this point one is in the happy position of quoting Dr. Herzfeld's own great authority against his suggestion. For his present suggestion is inconsistent with his own brilliant theory about the evolution of the symbol for Ahura Mazda from the Achemenian or even earlier times. Obviously, the right hand figure on our bas-relief bears no resemblance (in the matter of equipment or appearance) to the bas-relief representation of the divine at Behistun, or at the Naqsh-i-Rustam, or on the coins of Vatfradata I or of the Shahs of Stakhra. (Herzfeld's *Paikuli* I, 47.) The truth seems to be that the right hand figure is a human figure and its crown and appearance reminds us of the coins of Shapur I, as the head-dress and appearance of the central figure is reminiscent of the coins of Ardeshir I. (Herzfeld's *Am Tor Von Asien* p. 61.)

(2) If the two extreme figures on the bas-relief were two divine figures, as Dr. Herzfeld suggests, there would be a disharmony of a marked character in the sculpture—one god having the full divine equipment, weapon and a lotus pedestal; while the other god has no divine equipment at all, and even shares his pedestal with a mortal.

(3) There is no precedent in Achemenian or Sassanian sculpture of a god and a man standing together on a fallen figure—nor even of two royal figures standing together in that way. Indeed, the only occasion on which in Persian History two Kings triumphed together on the same foe was the case of Ardeshir I and Shapur I (conquering Artabanus jointly)—the latter fighting on the battle field of Hormuzan and distinguish-

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ing himself as a crown prince. This unique fact in Persian History would in itself suffice to identify the figures on the bas-relief as those of Ardeshir I and Shapur I.

(4) Ardeshir II never conquered any foe—either Iranian or foreign—and indeed he was himself deposed after four years' of precarious rule. Hence there was no occasion for him to have himself engraved on a triumphant bas-relief. His claim to any triumph was less than that of Bahram IV whom Dr. Herzfeld mentions (*Am Tor Von Asien*, p. 62), for the latter partitioned Armenia with Rome and hence had himself engraved standing on a fallen Roman.

(5) We might admit Dr. Herzfeld's contention that the bas-relief was of a later date and age than that of Ardeshir I, as is shown by the style of the sculpture (*Am Tor Von Asien*, pp. 64–66). That learned author has done a real service in drawing attention to this fact. But there would be nothing strange or out of the common in a later king erecting the bas-relief to the honour and memory of Ardeshir I who was regarded as divine by his dynasty. Such an act would be particularly appropriate in Ardeshir II who bore the name and copied the head-dress of Ardeshir I.

(6) There is good authority in later literature for the blessing of later kings by the spirit (fravahar) of Ardeshir I, the founder of the dynasty. Thus, in the *Afrin-i-Rapitvin*, we read that "*Hama-zor fravahar-i-Ardeshir-i-Babakan bad.*" This phrase seems to describe well the relative position of the two right hand figures of our bas-relief; and for the conjectural idea of "Belehnung" or "Consecration" we might advisedly substitute that of "hama-zor" which has religious tradition and texts behind it. The holding of the circular emblem by two figures on various bas-reliefs might well be the symbol of "hama-zor." Thus on one relief at Naqsh-i-Rustam, Ardeshir I is "hama-zor" with Ahura-Mazda, while between the supposed tomb of Darius II and that of Darius I, King Naresh is represented as "hama-zor" with Anahita whom, as his favourite angel, he had also sculptured on the Paikuli monument. This attitude of "Hama-zor" appears in some cases to be reminiscent of the practice of "taking the hand of Bel" in Babylonian days.

We have now dealt with the main arguments for the view that the figure with the halo on the Tak-i-Bostan is the sun-god Mithra. For an excellent presentation of this view the student might be referred to Dr. Justi's "Life and Legend of Zarathushtra" in *Avesta Studies, etc., in Honour of Peshotanji Sanjana*, pp. 157-8. We have seen that the weapon borne by that figure is not the "mace" or "club" required by the Mithra theory. Nor does the "star-lotus flower" at the feet of the figure help out the theory. In the Avesta there is no hint of the star-lotus flower being sacred to or symbolical of

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Mithra; and in the Pehlavi literature the lotus flower is expressly and authoritatively stated to belong to another Yazata. Dr. Justi instituted a comparison between the figure on the Tak-i-Bostan and the relief at Nimrod Dagh where Mithra is giving his hand to Antiochus of Kommagene (cf. Sarre *Die Kunst des alten Persien Taf.* 56). It would have been more appropriate to speak of a *contrast* between the two delineations—the dress and accoutrement of the angel and the attitude of the human figure towards him are quite different on the two reliefs. On the Nimrod Dagh figure, the angel's eyes are fixed steadily on his devotee and radiate spiritual influence. On the Tak-i-Bostan the god of War advances to support his favourite from behind. The only feature which is common to the two representations is the halo of rays round the head. The face of the real Mithra on the Namrud Dagh is that of a boy; he does not wear a sword but carries only a short knife; his head-dress is quite different—being the tall Phrygian cap; and there is no lotus flower at his feet which is conspicuous on the Tak-i-Bostan.

(III) Does the figure represent Zoroaster?

As regards the view that the figure on the Tak-i-Bostan represents Zoroaster, it needs to be emphasised that it rests on no arguments advanced for such an identification, but relies simply on a supposed "Parsi tradition." But had there really existed such a tradition worthy of the name, it would not have remained entirely neglected by such authoritative works as the Bundahish or Zarthusht Bahram's life of Zoroaster, or the Shahnameh, or the Arab writers who have referred to the Tak-i-Bostan sculptures. Indeed, there were no materials or circumstances on which such a tradition could be based. Had there been a Zoroastrian colony residing near Kermanshah and venerating the image, or had the Zoroastrians living in Persia been making even occasional pilgrimages to the Tak, there would have been a reliable "tradition" as regards the figure. But what tradition could form about the figure in the almost complete absence of personal visits to or veneration of that image, and of any records relating to it?

We have also to remember that it was much more difficult for a Sassanide sculptor to produce an image of Zoroaster than that of any of the *Yazatas*. Indeed, the difficulties were insuperable in the way of producing a portrait or sculpture of Zoroaster which would satisfy the men of the Sassanide epoch, when Avesta and Pehlavi works were read fairly widely; for neither the Avesta nor the Pehlavi texts give us anything like a description of the personal features of the prophet. It was far easier to produce sculptures of, and to represent satisfactorily and authoritatively, many of the *Yazatas*, especially Mithra,

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Bahram, Ardvisura Anahita and Ashi Vanghui who are fully described in the Yashts. Hence, in an age in which the Avesta and Pehlavi literatures were widely studied it was evident to all concerned that there were no existing materials for a representation of Zoroaster, and the formation of any traditional picture of the prophet was out of the question.

But when Avesta and Pehlavi studies declined and the matter was left to poets and romancers, a traditional portrait of Zoroaster came into existence, and is to be seen in innumerable manuscript and printed copies of the Shahnameh, and in some earlier printed editions of the Khordeh Avesta. But, this really "traditional" portrait of the prophet has little in common with the sculpture on the Tak-i-Bostan. In this traditional portrait, Zoroaster always appears with the fire Mihr Burzin which, according to the epic (though not according to Bundahish, Chapter 17, verses 5–8) he brought from heaven; he also bears a branch of his miraculous cypress, and sometimes his "book." In many of the portraits there is a halo about his head. The tradition is not only pictorial but literary—running through the Shahnameh, the Sharestan-i-Chahar-Chaman and the Dabistan. But, obviously, it was not accepted by the Avesta students even in the middle ages; for, Zartusht Bahram in his life of the prophet gives us no such personal description of Zoroaster.

The so-called portraits of the prophet which are in possession of the Parsis in India are easily accounted for; and there is no question of any of these representations being based on an independent tradition. The picture on the Tak-i-Bostan became available to them, early in the last century, through Sir R. Ker Porter's "Travels" and Sir John Malcolm's "History of Persia," together with the hint that it might represent the prophet of Iran. We note that as the result of this, most early printed copies of the Khordeh Avesta in Gujrati script bear the Tak-i-Bostan figure as a frontispiece representing Zoroaster. But the Parsis had also with them the "traditional" representation of Zoroaster in the Shahnameh, etc. Hence, most of the later representations of Zoroaster are composite copies of these two; and in almost all cases a lot of additional embellishment is added at the wish of the artist. The local artists have considered themselves entitled to give the reins to their imaginations; and as a result hardly any two portraits of the prophet painted or drawn in India resemble each other. Under such conditions little importance should be attached to their "traditional" portraits.

Speaking of the supposed Parsi tradition in favour of identifying the figure on the Tak-i-Bostan with Zoroaster, it is worth noting that a learned Parsi authority, Dr. J. J. Modi has, in his recently published Travels in Persia (p. 361) told us that after personally inspecting the bas-relief he is unable any

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more to subscribe to that tradition. He has expressed his conviction that the place assigned to the supposed prophet in the bas-relief does not accord with the peculiar respect due to him. As I have pointed out earlier, the central figure stands fairly with his back to the figure in question; and in this connection Dr. Modi could have quoted the words ascribed to Zoroaster himself in Chapter XX, 13 of Selections of Zad-Sparam (S.B.E., Vol. XLVII, p. 154): "Whosoever takes away a sight from me, does not practise respect for me."

There are other important considerations which render the view as to the identity of our figure with Zoroaster very difficult of acceptance. In the first place, the prophet of Iran attained the venerable age of 77 when he passed away; and if the sculptor of the Tak-i-Bostan had really desired to give us his portrait, he would not have engraved such a comparatively youthful and athletic figure as we have before us. In the second place, Zoroaster was eminently a man of peace and good-will towards all, and we have no hint anywhere of any military exploits of his. It would be highly inconsistent with such general testimony, to represent him holding a heavy sword with both his hands in the bas-relief. The contrast is the more inexplicable and glaring, since only the supposed prophet bears a drawn sword, while the two other personages on the bas-relief are engaged in peaceful occupations. Whether we regard these two other personages as Ormazd and Ardeshir I (with Justi) or as Ardeshir I and Shapur I (with other authorities), the anomaly of a peaceful, old and venerable prophet alone bearing a sword and presiding over the scene in a martial attitude is obvious. But if, as I have suggested, the figure is that of the angel Bahram, it is most natural that the warrior-angel should perform such a function.

(IV) The hypothesis identifying the figure with Ahura-Mazda.

As both Prof. Rawlinson and Mr. Thomas have suggested that the "radiated figure" is Ahura-Mazda (cf. *Seventh Oriental Monarchy*, p. 64 and *Journal of Asiatic Society*, New Series, Vol. III, p. 267, note 3), it is due to the reputation of these scholars to discuss their suggestions. I venture to submit, however, that to me their hypothesis appears to be the weakest put forward to account for the "radiated figure." What are taken to be the traditional images of Ahura-Mazda have personal characteristics very different from those of the figure on the Tak-i-Bostan. On the Parthian coins and elsewhere "Ahura-Mazda regularly appears as a bearded man in a winged disc" (Dr. A. J. Carnoy in *Iranian Mythology*, p. 342). Dr. Herzfeld has given us "the uninterrupted evolution of the Divine symbol from the Assyrian up to the Sassanian epoch" (cf.

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Paikuli, Vol. I, p. 47). Then again Ahura-Mazda appears in the bas-relief at Naksh-i-Rustam in which he is represented as bestowing the insignia of royalty on Ardeshir I (cf. Ker Porter, *Travels*, Vol. I, plate 27; Flandin, plate 193; Curzon's *Persia*, Vol. II, p. 125), but there also he "has a long beard and flowing locks." Admitting for arguments' sake that these latter are the representations of Ahura-Mazda, the very youthful and in other respects different figure on the Tak-i-Bostan *obviously* cannot represent the same divinity. It is certain that Mr. Thomas himself had felt the force of this difficulty as regards his hypothesis; for, he adds, in his footnote, that on the Tak-i-Bostan "Ormazd is depicted in a new or modified form." But he furnishes no reason for such novelty or modification.

The Artistic Aspect of the Bas-relief.

Let us for a moment drop the archæological point of view and consider how the present suggestion as to the identity of the nimbus-figure with Bahram fits into the conception of the bas-relief as a work of art. For, after all, and in the main, it is an artist's conception and must be studied as such.

Suppose the view advanced here to be true that the two royal figures standing on the prostrate and fallen Parthian are those of Ardeshir I and Shapur I who are triumphing on their victory over Parthia; Ardeshir I is depicted as about to assume the sovereignty of Persia and he is just going to receive the reward of a life time of striving and fighting. In this supreme moment of the crowning of his life's ambitions and of the assurance of his son's future as well, Ardeshir feels that the sacred presence which has so often stood by him in his fights has appeared behind him to support him. To adapt the words of the Karnameh itself "the Glory of the Kayans which had been previously far from Ardeshir now stood near him and gradually approached nearer." If we look at the bas-relief, we see how near the glory is to Ardeshir—so near indeed that Ardeshir feels the flash of a great protecting sword held aloft in his rear and understands that the Glory is borne by its powerful co-adjutor—Bahram; for no mere glory can bear a great sword. It is this dramatic moment of this advent of Bahram with his glory to support Ardeshir that the artist of the bas-relief has meant to represent for us—it is the apotheosis of Ardeshir I.

Very appropriately the artist has selected for representation that particular moment when the angel appears on the scene of the transfer of royal power. Indeed under the bas-relief might be inscribed as its descriptive title those words which so often reverberate through the Bahram Yasht, and which also assert the syncretism and the inseparable association of the glory and Bahram.

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avaθa ājasaṭ vōhū Xᵛarenō mazda-δātem baraṭ.

"Thus did he (Bahram) arrive (to help), bearing the good glory made by Mazda."

Certainly, the pious Zoroastrian of the Sassanian age who was versed in the legendary lore of Ardeshir's career, had no doubt, when he looked up to the bas-relief that the King owed his rise to the signal and timely help from that angel.

Conclusion.

Summarising the line of argument developed above, I venture to submit, that the most probable hypothesis is that identifying the figure on the Tak-i-Bostan with the angel Bahram. This hypothesis has in its favour the fact that in the sculpture we find—both as regards the general idea and the details—the fulfilment of the description of the physical features of that angel as laid down by the Bahram Yasht. Not only does this suggestion account for most of the features of the figure, but it is, I submit, broadbased upon the large mass of contemporary tradition and inscriptions and on all that we can learn from the Sassanide sources relevant to the problem in hand. The next strongest theory which, in my humble opinion, is the Mithra theory, seems to be much less convincing, because it is not based on such general considerations, but is grounded upon isolated circumstances like the nimbus on the head of the figure and on the supposed sun-flower at its feet. But if one or two isolated circumstances like these are to carry conviction, and to decide the problem, then a much more likely suggestion could be easily put forward. The theory could well be advanced, for example, that the figure with the halo represents Sasan (the ancestor of the Sassanides); for in the early portion of the Karnameh we read: "One night Papak saw in a dream as though the sun was shining from the head of Sasan." That text would no doubt, in a sense, account for the figure with the halo on the bas-relief; and no one could deny the propriety of the legendary ancestor of the house of Sasan appearing on a bas-relief representing the rise of his dynasty. But, as I have submitted above, isolated circumstances or coincidences cannot by themselves prove a historical case; and a solution of our problem should rest on larger and surer historical grounds. The great bas-relief of the Sassanide age should be interpreted in the light of its favourite cult and of the historical legends of the period.

I conclude by expressing the hope that distinguished Avesta scholars and archaeologists will do me the honour of examining my thesis and my arguments. The subject of our study is a fascinating one in itself, and of importance both to the Parsis and to the history of Persia, and it will no doubt secure the attention which it deserves. Meanwhile there is one local scholar to

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whom I must express my obligations. But for the encouragement which I received from Prof. Taraporewalla of the Calcutta University I could never have ventured to work up a subject so remote from my own line of study. I am also obliged to him for the loan of several books from his collection and for making available to me alternative translations of the texts quoted from the Bahram Yasht.

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Little-Noticed Habits of Some Birds of the District of 24-Parganas.

By Satya Churn Law.

(With five diagrams)

1. *Centropus sinensis.* The Common Coucal.

The records that are available of the nidification of this bird in Northern India almost invariably point to the rains as its normal breeding period. Blanford in *Fauna of British India, Birds, Vol. III* (p. 241), writes that it "breeds chiefly in June, July, and August." Three is mentioned (in those records) as the normal number of eggs, "though four and even five are at times met with." Regarding the shape of the nest which is usually a fairly big and globular structure, Hume[1] speaks of its being domed "most commonly," but 'not always' so in India. Col. Butler[2] has referred to a nest being "open at the top." The nest is described as "simple, about the size of a very large round plate with a depression in the centre for the eggs."

My excursions and observations in the district of 24-Parganas lead me to conclusions which fail to tally with the records mentioned above. I find that *Centropus sinensis*, much as it signalises the advent of its breeding season by frequent hoots, is secretive to a degree and tries to hide its nesting operations from the eyes of men. It commences nesting as early as the middle of March. In April it has eggs—the usual number is four, so far as my observation goes—which hatch out towards the end of the month, and by the middle of May the young are full-fledged and able to come out of the nest. This success, however, does not invariably attend the efforts of every nesting pair, for, hampered not infrequently by the rains and storms that follow in the wake of nor'westers, so common at this time, they may have to build anew and consequently raise their brood at a later period. But a pair, which has the luck to rear its young in May, unimpeded by any accidents, apparently raises a second brood during the rains, for in July these fledglings are numerous and come frequently to our notice. The nest is built usually in bushes or thickets, not uncommonly in trees and even in grass jungle. The materials vary accord-

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[1] The Nests and Eggs of Indian Birds by A. O. Hume, 2nd Ed., Vol. II. p. 402.

[2] *Ibid.*, p. 402.

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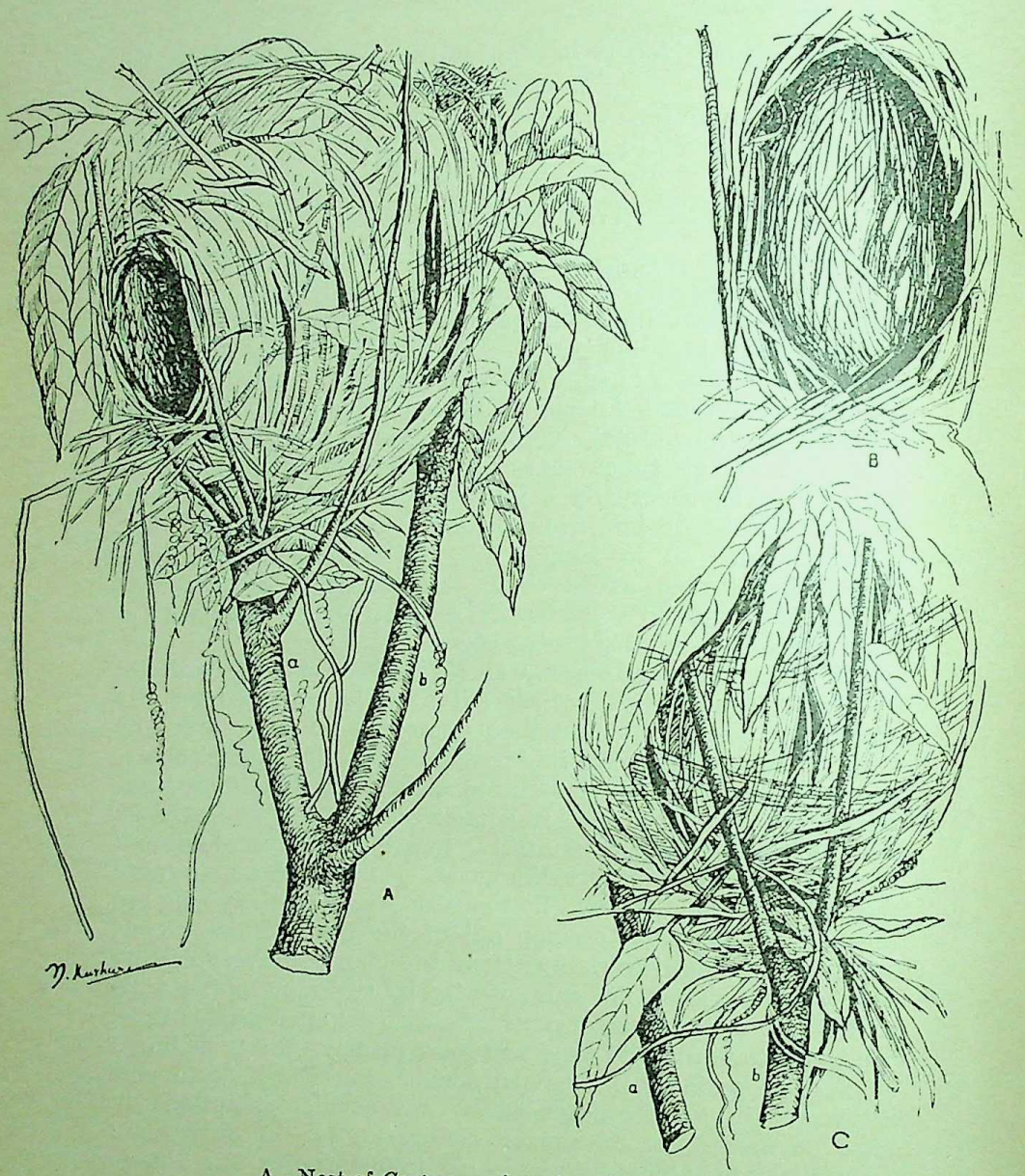
ing to the exigency of the situation where the nest is constructed, as says Munn[1] "if in grass jungle, the nest is



A—Nest of *Centropus sinensis*: Outside view.
B—Entrance to the nest.
C—Back view of the nest.

Fig. 1.

[1] Birds of the Calcutta District by P. W. Munn. Ibis 1894, p. 56.

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composed of dry grass or reeds, but if among bushes or in a tree, usually of sticks lined with grass or leaves." I have, however, come across a fairly large number of nests in trees, which are made up exclusively of cocoanut leaves (without any stick or grass) and in nine cases out of ten I have found that they are without any dome and never open at the top, but well ventilated and thoroughly clean, and the entrance is large and elliptical. It strikes me as remarkable that in a majority of these nests, though the materials (which are exclusively long strips of cocoanut leaves) are placed loosely and are never fixed firmly to or round any stout stem, the structure appears to be cleverly laid between several branches and twigs, which furnish its chief support. To illustrate my point I append a diagram of a nest which I found on the 24th March, 1926, on a lofty mango tree in Agarpara, a village in the District of 24-Parganas, about 10 miles north of Calcutta.

The sketch (Fig. 1) shows that the nest has for its support two thick mango branches (which I may for the sake of explanation call *a* and *b*), each of which splits into a number of twigs. A single twig from branch *a* supplies the main plank for the threshold to the entrance, while three other twigs from the same branch support the left-hand outer wall of the nest and two other twigs from the same branch *a* again prop up the right side of the outer wall. The entrance is also supported by another twig from branch *a*. Of the twigs which shoot off from branch *b* the two thicker ones support the right side of the outer wall, while a single twig lends support to its left side. This nest is made up entirely of loose cocoanut leaves (with a sprinkling of creeper stems and mango leaves), which are not tied firmly or twisted round any stem, twig or branch either inside the nest-wall or outside. No grass or reed was found as a nest material. The measurements of the nest are as follows :—

Inside.		*Outside.*	
Length ..	.. 9″	Length ..	.. 10½″
Breadth ..	.. 7″	Breadth ..	.. 8″
Height ..	.. 10″	Height ..	.. 17″
		Circumference (outer)	.. 42″

There were only two eggs in the nest on the 24th March 1926, but four were present when I came to inspect it again on the 28th,—an unusually early date. I could find no depression in the floor of this nest to serve as a receptacle for the eggs.

From the measurements cited in his 'Nests and Eggs of Indian Birds'[1] Hume calculates that the nest "of course is not long enough to admit the whole bird, so that when sitting the tail is commonly seen projecting outside the nest." I can

[1] 2nd Ed., Vol. II, p. 400.

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not imagine that a wary and secretive bird like *Centropus sinensis* is ever capable of indulging in this stupid habit which is sure to spell its own ruin. In my excursions, which are very frequent in the district of 24-Parganas, I cannot recall any single instance of a Common Coucal incubating its eggs in the attitude mentioned by Hume. On the contrary, it has often been my experience to find it sitting stealthily within the nest, which appears, more often than not, to be built purposely in a place screened from human eyes. The mere fact that the bird has a knack of erecting its tail, when it has jumped up to a perch or descended on the ground, demonstrates with what ease it can adjust itself while sitting on its eggs, so that the upraised tail can rest in contact with the inside walls of the nest without protruding outside.

2. *Merops viridis.* The Common Indian Bee-eater.

Little notice appears to have been taken of the fact that there are certain birds which, although their sprightly habits and numerical strength in a particular district or locality keep them prominently before our gaze almost throughout the year, yet when the time comes for their nesting, disperse and slip off imperceptibly into obscurity, retiring to out-of-the way, unfrequented places, which are sometimes inaccessible to man. There are, on the other hand, certain other birds which, although they fight shy of human company for a considerable part of the year, come prominently before our eyes amidst our homesteads in the heart of a village during their nesting period. It is noteworthy that both these types of birds, however contrary may seem their behaviour in relation to man, are non-migratory residents of the aforesaid locality or district, though their temporary obscurity and re-appearance might tend to create a false impression in regard to the character of their movements. *Merops viridis* is a striking example of the former group of birds and throughout the district of 24-Parganas it is such a conspicuous figure in our countryside that one wonders how it can evade our notice for however short a period, while engaged in nidification. It is easy to realise that a bird, however familiar, which is unsociable and exclusive in its habits can in the course of its wanderings in search of a nesting site very well elude our notice. *Merops viridis* goes about in flocks and is addicted to a gregarious mode of existence, so that its congregational activities throughout the district are too glaring to be ignored. Yet, contrary to expectation, the process by which the spiriting away of a whole flock is effected appears to be shrouded in mystery. Patient observation, however, reveals that the advent of its breeding season early in March tends to set on foot a disruptive motion amongst the flock, which splits into very small units, each hieing silently to their nesting area. This area lies, more often than not, in an unfrequented part of the village which obviously affords sufficient immunity from

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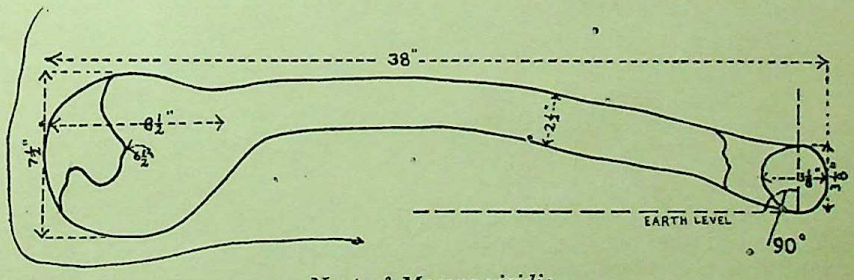
intrusion or depredation by enemies. *Merops viridis* constructs its nest by digging a hole in the ground. *Bāndhs* or embankments, surfaces of *nullahs*, cuttings or ditches, cliffs, banks, mud-walls and raised mud-boundaries between orchards are the places where one should look for these nests; but it is not unusual to come across them in perfectly level ground, such as barren or uncultivated meadows and fallow lands. Two or three pairs of these birds and sometimes even a single couple will now be seen strenuously at work, each couple digging its nest at some distance from the other. It is noteworthy that though disbandment at this season is of distinct advantage to the perpetuation of the race, this custom does not appear to be uniformly followed; for instances are not rare even in the district of 24-Parganas, where after the process of dispersal has been completed, the units re-unite in their breeding area and thereby revive the old congregation. The high bank of a canal or stream, or the steep face of an embankment will sometimes afford a congenial site for such re-union and many a nesting couple of *Merops viridis* will be noticed early in April to arrive at the scene in regular succession, swelling the rank of those of their kin which are now busily engaged in digging their nest-holes. Several of these holes are dug in close proximity to each other,—an index of party instinct to which are now sacrificed the pugnacity and self-interest of disjointed pairs or units striving apart from company to rear their young.

The nests of *Merops viridis* are never constructed in wet earth. The holes that are drilled in the bank of a river, canal or cutting lie always above water-level. Once a nesting site has been selected, the bird starts forthwith to dig its burrow and does not appear to be guided by any consideration of the hard or soft nature of the soil, though the latter no doubt determines in a large measure the shape, viz., depth, declivity and direction of the nest-hole.

The relation between the shape of a Bee-eater's nest and the nature of the earth where its burrow is made affords



Nest of *Merops viridis*.
Site: Mound of soft sandy earth.
Fig. 2 A.

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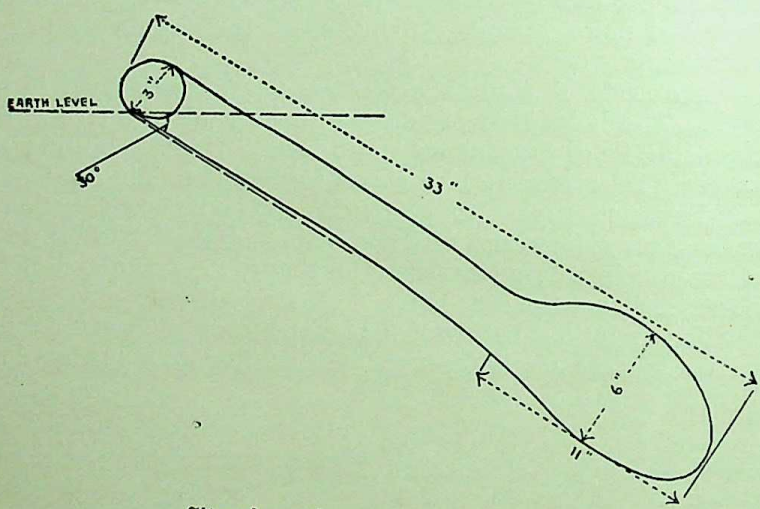
a highly interesting study, and what little observation I could make on this point is best illustrated by diagrams of some nests that I discovered during March and April, 1926, in Rāmchandrapur, a village near Sodepur Ry. Station, about 12 miles from Calcutta. Fig. 2 A shows a tunnel burrowed in a mound of soft sandy earth dug out from a brick-field and heaped on its margin. The direction of the burrow is almost on a level with the aperture or entrance for the nest. The soil being soft, the bird had to work its way evidently for a sufficient depth to ensure comparative safety, so that the total length of the burrow inclusive of the nest chamber measures 38″. It may be pointed out that the bird accomplishes its feat by first digging out the earth with its bill, and then scraping it away with its claws. In a heap of earth piled beside a ditch or excavated brick-yard, the horizontal shape of the nest, pierced and lengthened out to a depth of 38 inches almost in a straight line is the one which is better calculated to provide security and minimise time and labour than a vertical burrow or an inclined nest which runs a risk of being easily choked or covered over by the surrounding soft earth. It is easy to realise that this risk does not exist in a soil which has settled down to a sufficient degree of firmness or is very hard by reason of clay and other similar ingredients in its composition.



Site of nest in a more steady soil.

Fig. 2 B.

Fig. 2 B represents a nest in a similar situation (viz., a mound of excavated earth in a brick-field) but in a more steady and firm soil. The inclination of the burrow at an angle of 30° is thus rendered possible without any danger of its being buried by the surrounding earth. But the tunnel is sufficiently

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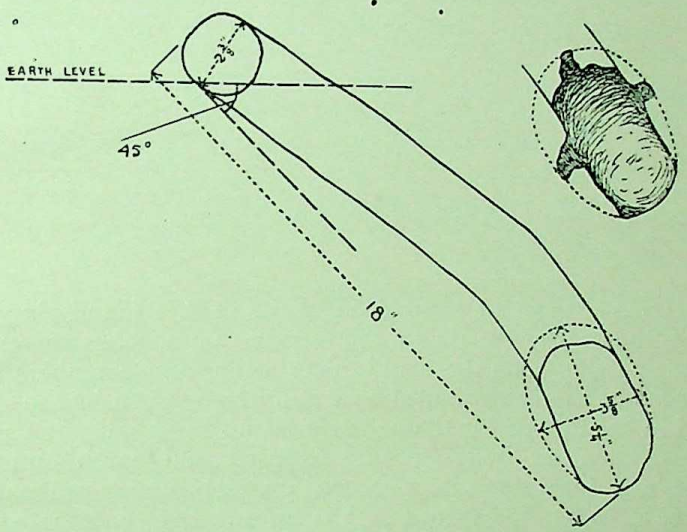
long (33 inches), evidently for the purpose of ensuring comparative safety in an only partially firm ground. All the nests of *Merops viridis* in very hard soil, which I came across, were in fallow fields and pasturage, where the roots of rank weeds and elephant grass appeared to hold the earth together. Here drilling is no easy job, a factor which obviously explains why all these nests are shorter in length than those I discovered in softer and more unsteady soil. It is worthy of note that these burrows invariably had an inclined shape and direction. The reason for this appears to be that a bird in its act of drilling through hard ground gets a better grip as it were, while excavating in an inclined plane than when it has to dig its way horizontally and in a straight line. In



Nest of *Merops viridis* in very hard earth.
Unusual nest chamber.

Fig. 2 C.

Fig. 2 C, a sketch is given of a nest burrowed in very hard earth, its angle of inclination being 45°. Fig. 2 D is another representation of a nest in difficult ground, sloping at an angle of 30°. In both these cases, the length of the tunnel inclusive of the egg-cavity is much shorter, being 18″ in C and 26″ in D. It will be apparent from the illustrations that the nesting chamber in cases in which it protrudes to one side, either right or left, somewhat resembles in shape the head of a golf-club. But in type C its shape is unusual, there being no palpable extension either on the left or right side, nor is there any gradual slope towards it. The egg-cavity lies at the extremity of the tunnel, being scooped wider and deeper down from this plane, so that it can only be reached by a direct jump

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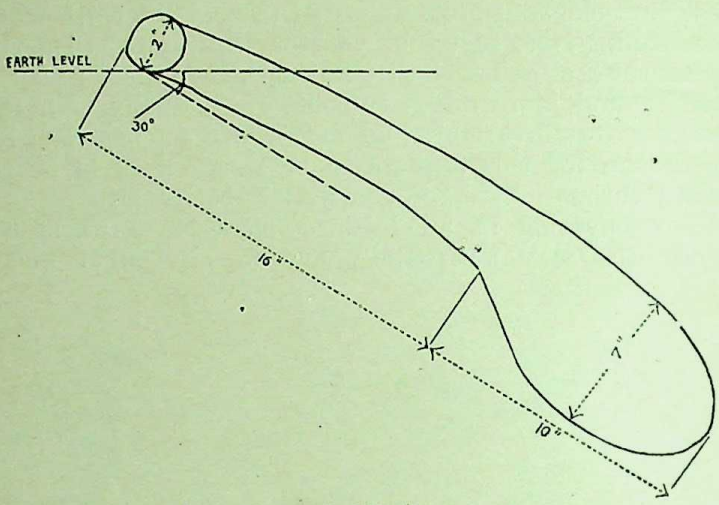
from the higher level of the passage, a portion of the wall of which overhangs it like a vaulted parapet (vide Fig. 2 C illustration). Each of the nests C, D and A contained six eggs



A nest in hard, difficult ground.
Fig. 2 D.

in varying stages of incubation, while in B, I found six young with the feather-tracts in their body commencing to appear. While cutting open these and many other nest-chambers I was amazed at the behaviour almost uniformly shown by the sitting bird in the face of the disturbance set up by the digger's spade. Even when its body became exposed and earth and dust crumbled down upon it, it showed no perturbance and made no attempt to evade capture. It is noteworthy that the eggs or young of *Merops viridis*, whenever I found them in a nest in the district of 24-Parganas, were almost invariably six in number; Blanford[1] and Hume[2] however mention five as the highest number, and if I came upon five young in one nest there was always an unhatched egg (which was evidently infertile) lying in a corner.

3. *Terpsiphone paradisi.* The Indian Paradise Flycatcher.

There is no gainsaying the fact that while a bird's movements have usually a reference to the food conditions prevalent within any given area or district, the exigency of its nesting gives to its movements a direction, which is sometimes indicative of the bird's behaviour (while nesting) in relation to man. The Indian Paradise Flycatcher, *Terpsiphone paradisi*, a bird of fairly wide distribution may be taken as an instance in

[1] Fauna of British India, Birds, Vol. III, p. 111.
[2] Nests and Eggs of Indian Birds, 2nd Ed., Vol. III, p. 60.

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point. Unlike *Merops viridis*, it avoids human associations for a major part of the year, and its wanderings, lacking as they are in definiteness and character, appear so uncertain as to baffle all attempts to take a correct note of them. It is only during the advent of its nesting season that we see some semblance of method in its movements. The clockwork regularity with which *Terpsiphone paradisi* appears year after year in its old nesting sites, situated though they be in the heart of a crowded village, is in marked contrast with its evasive and rambling habits and its conduct at other times in relation to man. While this species usually remains hidden from our view, the apparent suddenness of its visits which recur year after year at the stated period to the scene of its former nesting, accounts for most of the erroneous impressions in regard to the character of its movements. Thus from Munn's[1] mention in his note "On the Birds of the Calcutta District" of *Terpsiphone paradisi* as "arriving in April and remaining until the middle or end of October," the inference is irresistible that the bird is a migrant in the district. Again its visits are apt to be characterised as "seasonal," or in a great measure so,—an impression evidently based upon the recurring nature of its appearance in a given area during its nesting season. It appears to me that it is only when we take note of the fact that its movements within any district are regulated by the prevailing conditions of its food-supply that any correct reading of those movements is possible. It will then become easy to account for the presence or absence of *Terpsiphone paradisi* at any particular period in parts of its habitat. Mr. Stuart Baker[2] is also inclined to ascribe its roaming habit to the exigency of its food conditions. So far as my own observation goes, I have found this bird to be a permanent resident in the district of 24-Parganas, but although it shows a preference for a particular locality during the nesting season, it is generally not attached to any circumscribed haunt. It moves about locally in parts of its habitat, though a few instances came to my notice of a single pair remaining in a favoured spot throughout the year, e.g. in the heart of a village, Debandipur, off Sodepur Railway Station, about 13 miles distant from Calcutta. With the advent of its breeding time, the bird's movements appear to have a pointed reference to the suburban seats of men, where, in the adjacent orchards and fruit gardens within the district, numbers of *Terpsiphone paradisi* make their appearance and readily attract our notice. The Mango, *Lichi*, Jack and Bamboo branches appeal more than others to its instinct of site-selection while nesting, and in a suitable fork amongst them is inserted its nest,—a specimen of unique

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[1] Ibis 1894, p. 47.
[2] Fauna of British India, Birds, 2nd Ed., Vol. II, p. 267.

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architecture, whose special feature is its outward embroidery with the aid of cocoons, lichen and spiders' egg-bags.

It is remarkable that, notwithstanding its striking personality and commonness at this season, very little observation appears to have been made of its nesting habits. So far as the district of 24-Parganas is concerned, Munn's is the only record [1] available of the nidification of this bird. He writes—"they do not usually lay before June," and speaks of a nest found by him on June 8, 1890, to contain young. The female bird, he observes, "apparently does all the work (of nesting), for the cock bird at this time is extremely shy and generally remains quietly perched in a tree near the nest and watches the operation and keeps the hen bird to her work." Oates [2] records May to July as its time for nesting, whilst Mr. Stuart Baker [3] mentions May and June as the breeding periods of this bird in Northern India. I have, however, found that *Terpsiphone paradisi* sets about building its nest as early as April, so that by the last week of this month the nest is not only complete but the eggs are laid. Throughout May, June, July and even in the second week of August, I have observed its nests, eggs or young. I have in many instances observed the cock bird in the act of sitting on the eggs within the nest, so that Munn's observation on this point appears to be based upon inaccurate foundation. Mr. Stuart Baker [4] bears me out, for he records—"the cock bird, which shares in the duties of incubation, is a conspicuous object when sitting."

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[1] Birds of the Calcutta District.. Ibis 1894, pp. 47-48.
[2] Fauna of British India, Birds, Vol. II, p. 46.
[3] Fauna of British India, Birds, 2nd Ed., Vol. II, p. 266.
[4] *Ibid.*, p. 266.

पुस्तकालय
गुरुकुल कांगड़ी विश्वविद्यालय
हरिद्वार

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